

RECLAMATION

Managing Water in the West

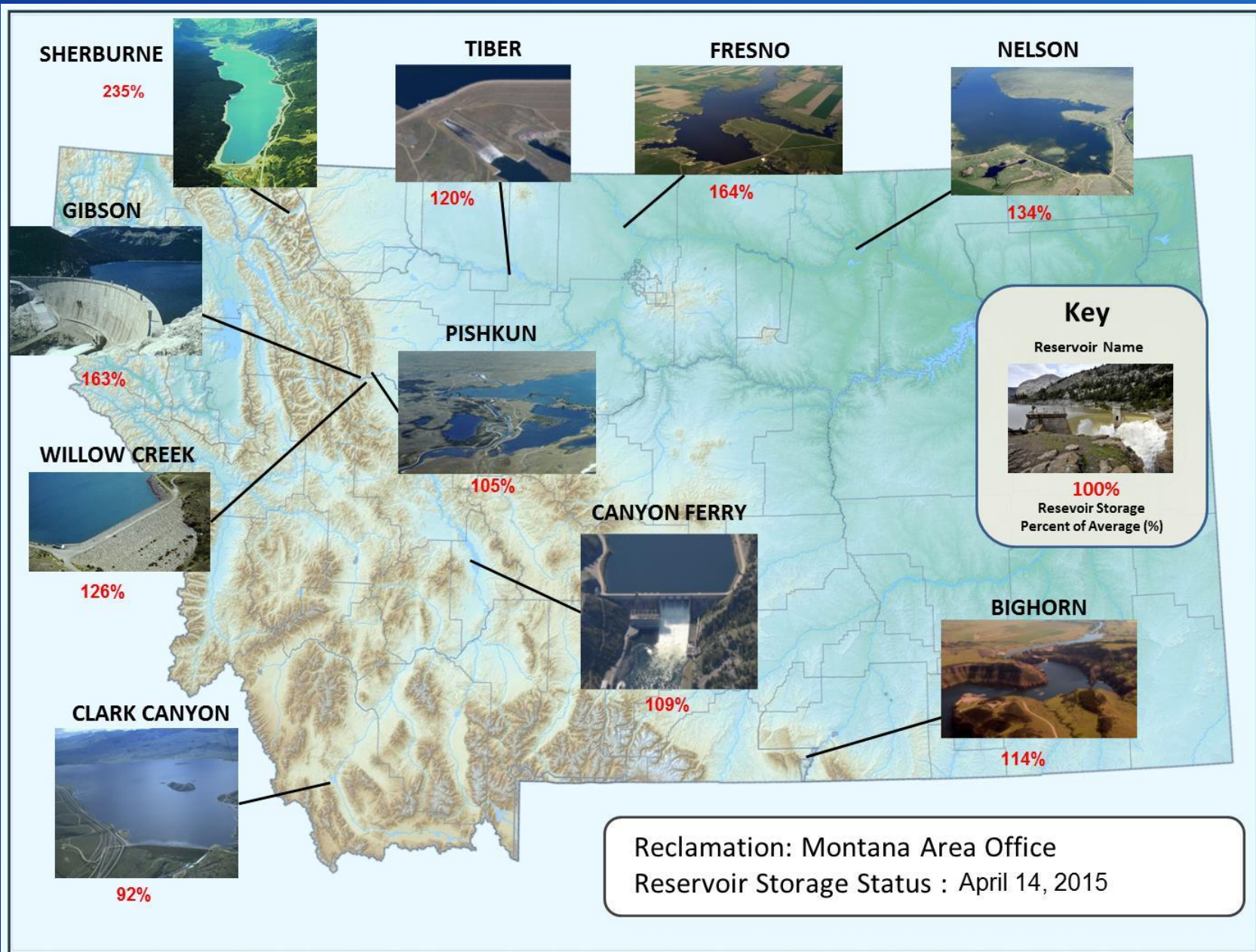
Snowpack, River, and Reservoir Status Briefing

RESERVOIR AND RIVER OPERATIONS

**Montana Area Office
Billings
April 16, 2015**

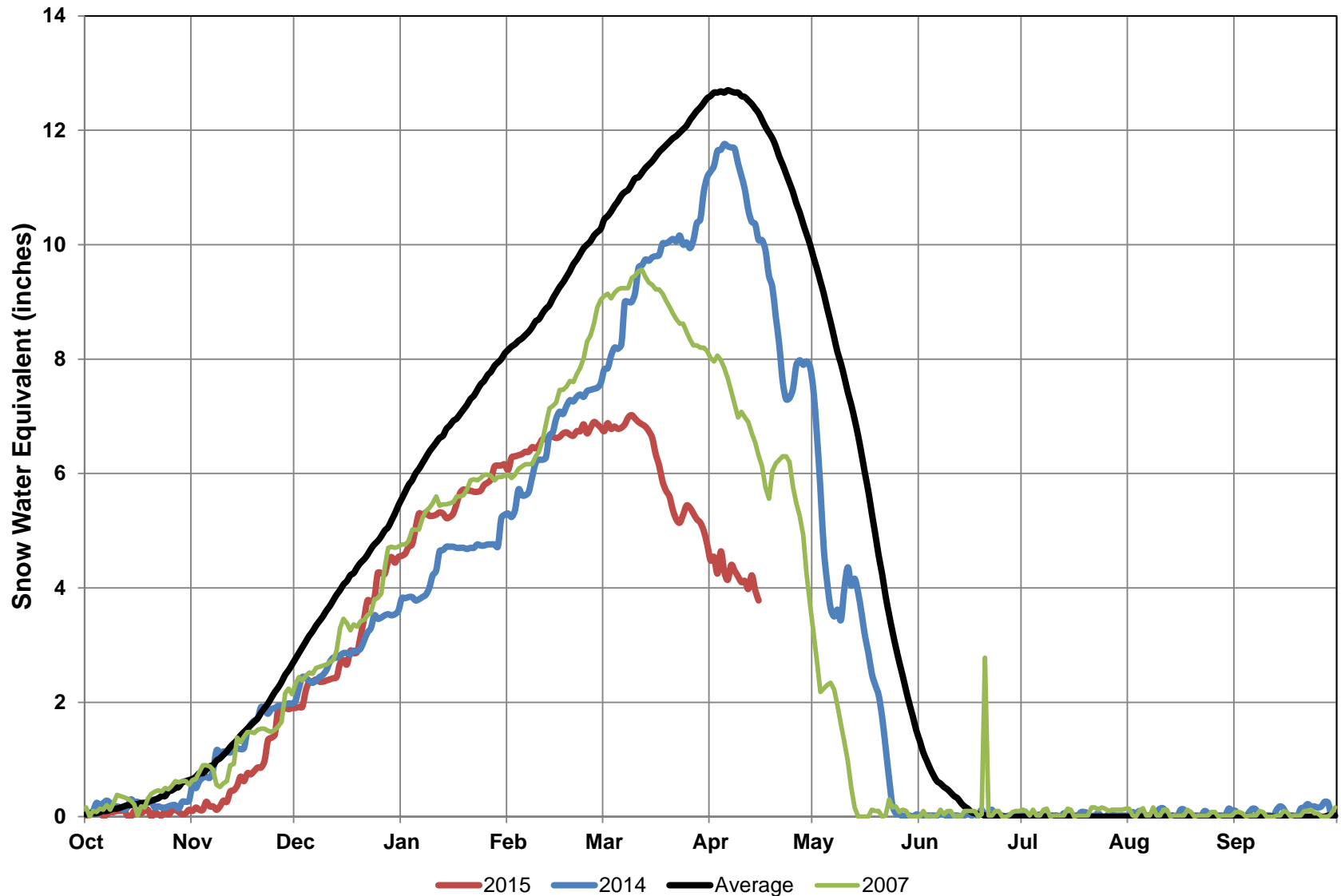


U.S. Department of the Interior
Bureau of Reclamation



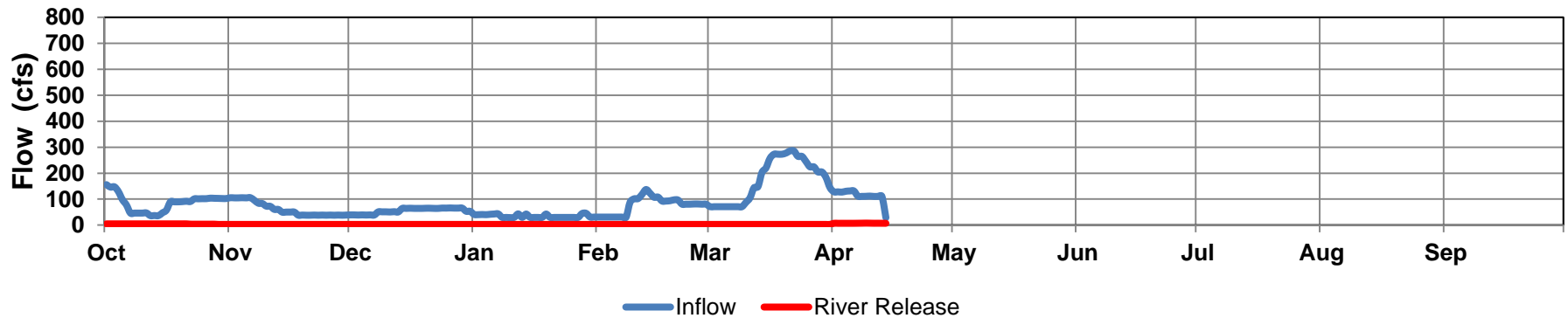
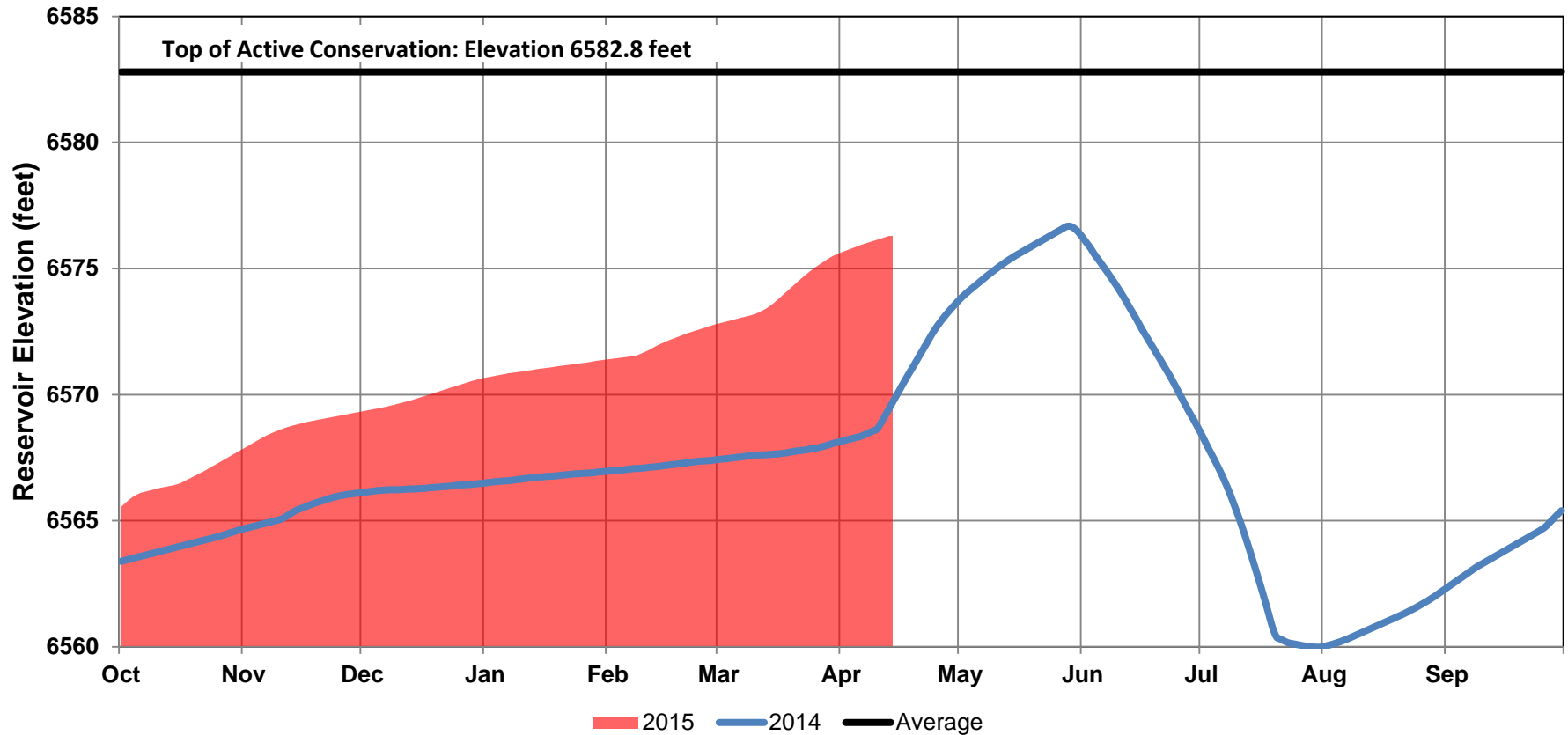
RECLAMATION

Snowpack above Lima Reservoir

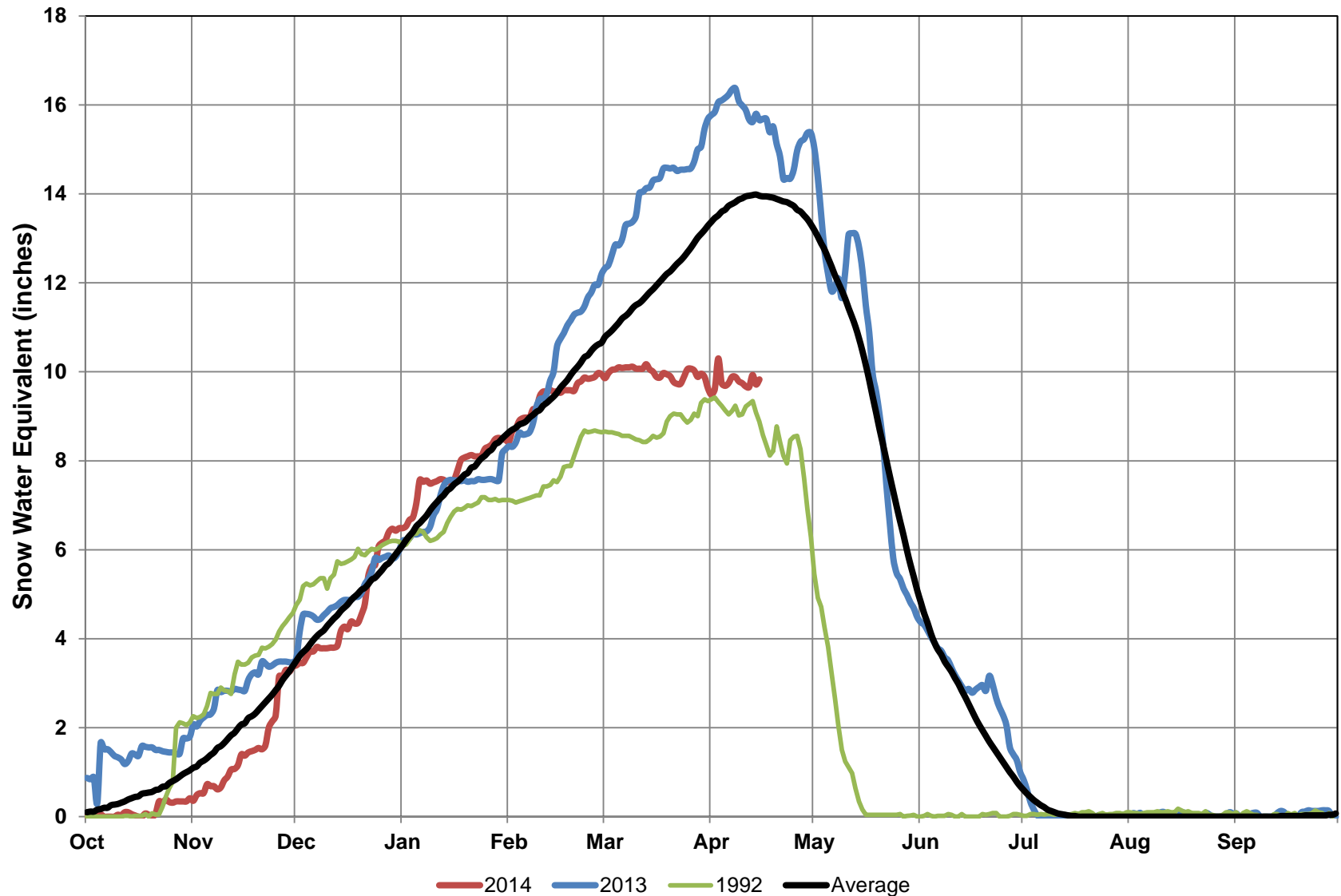


RECLAMATION

Lima Reservoir Operations

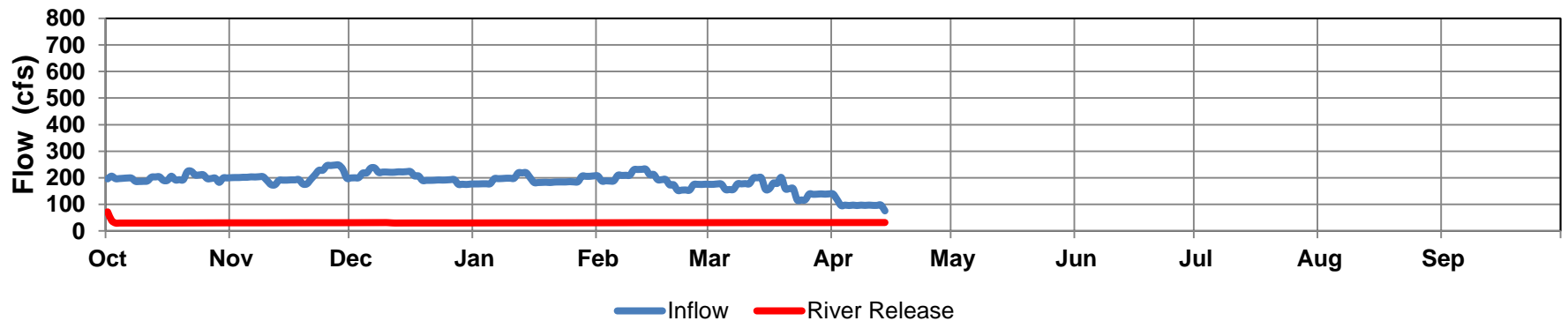
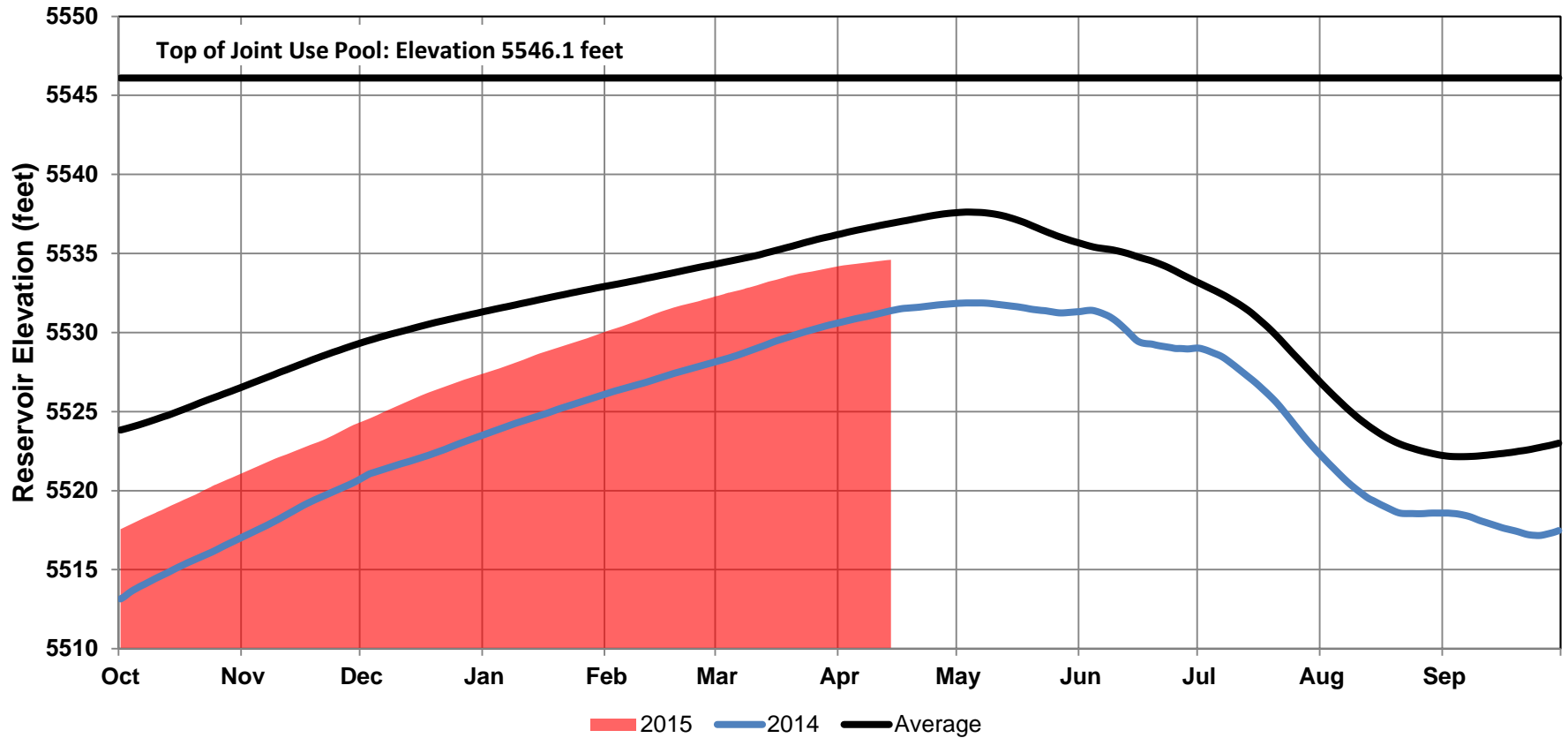


Snowpack above Clark Canyon Reservoir

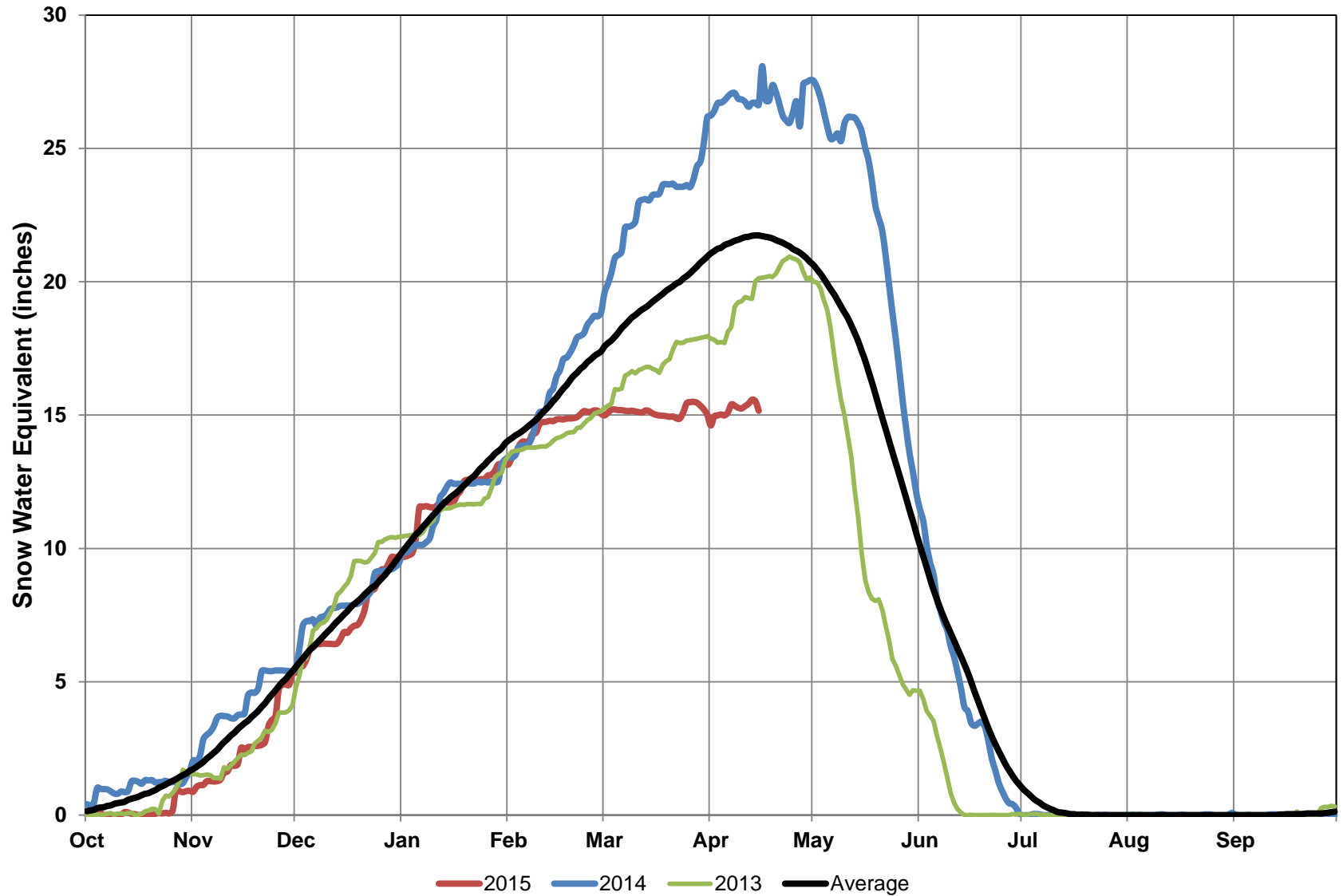


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Clark Canyon Reservoir Operations

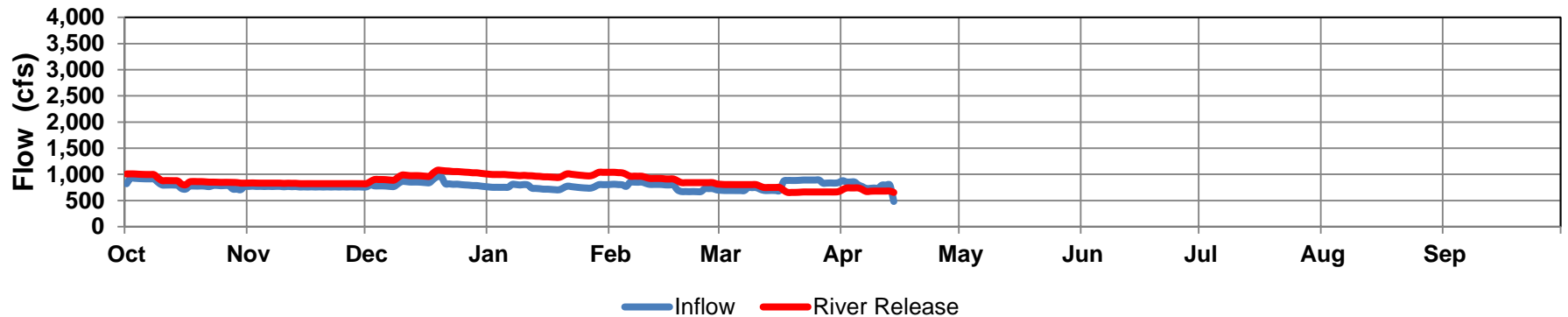
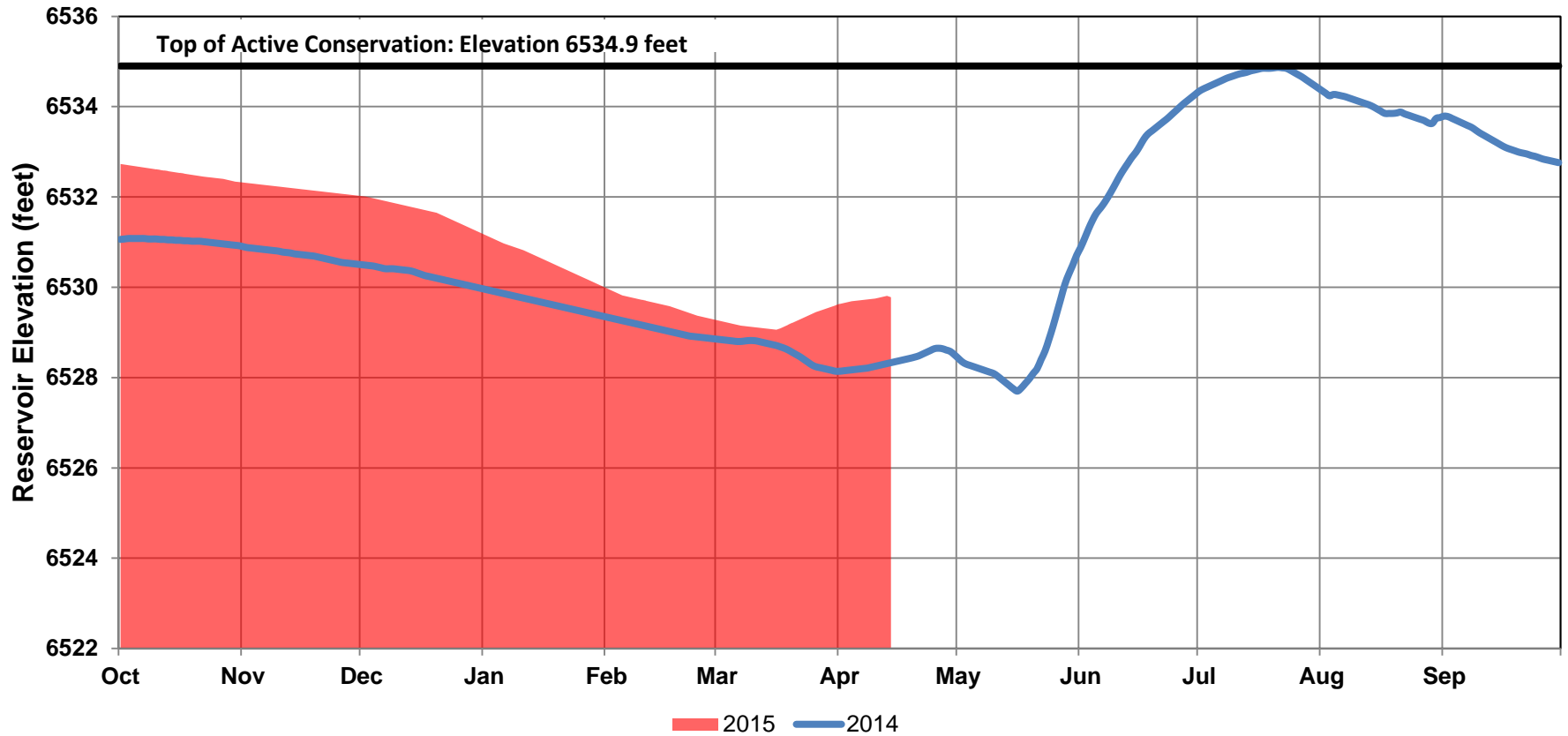


Snowpack above Hebgen Reservoir

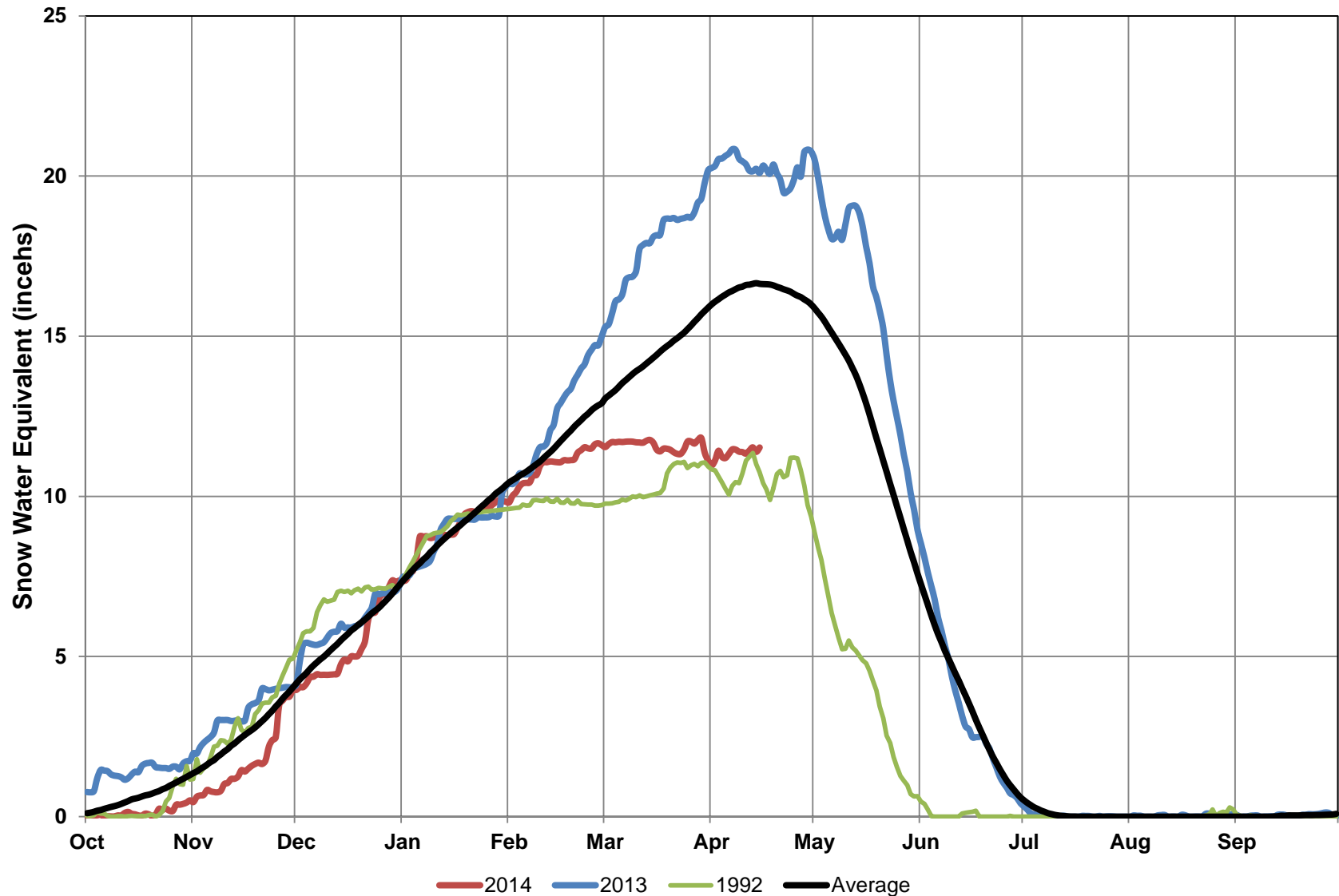


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Hebgen Reservoir Operations

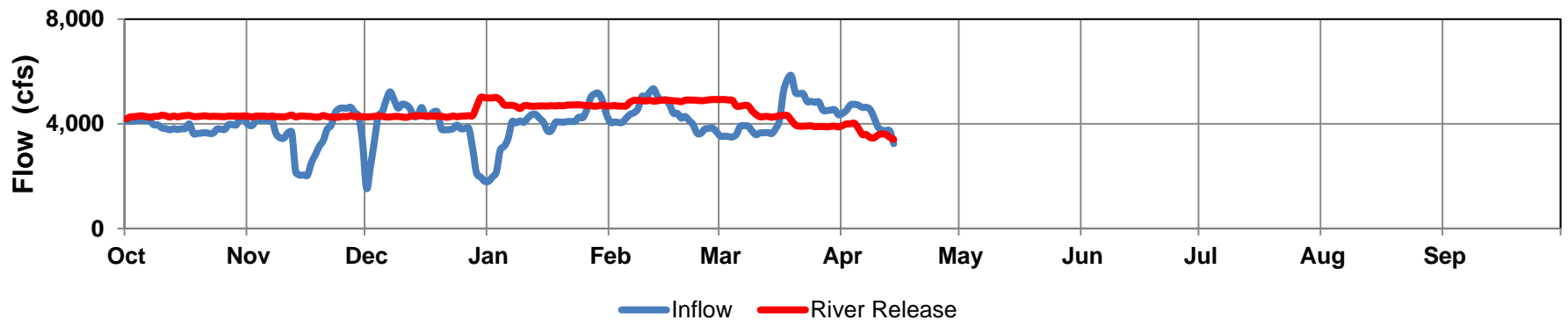
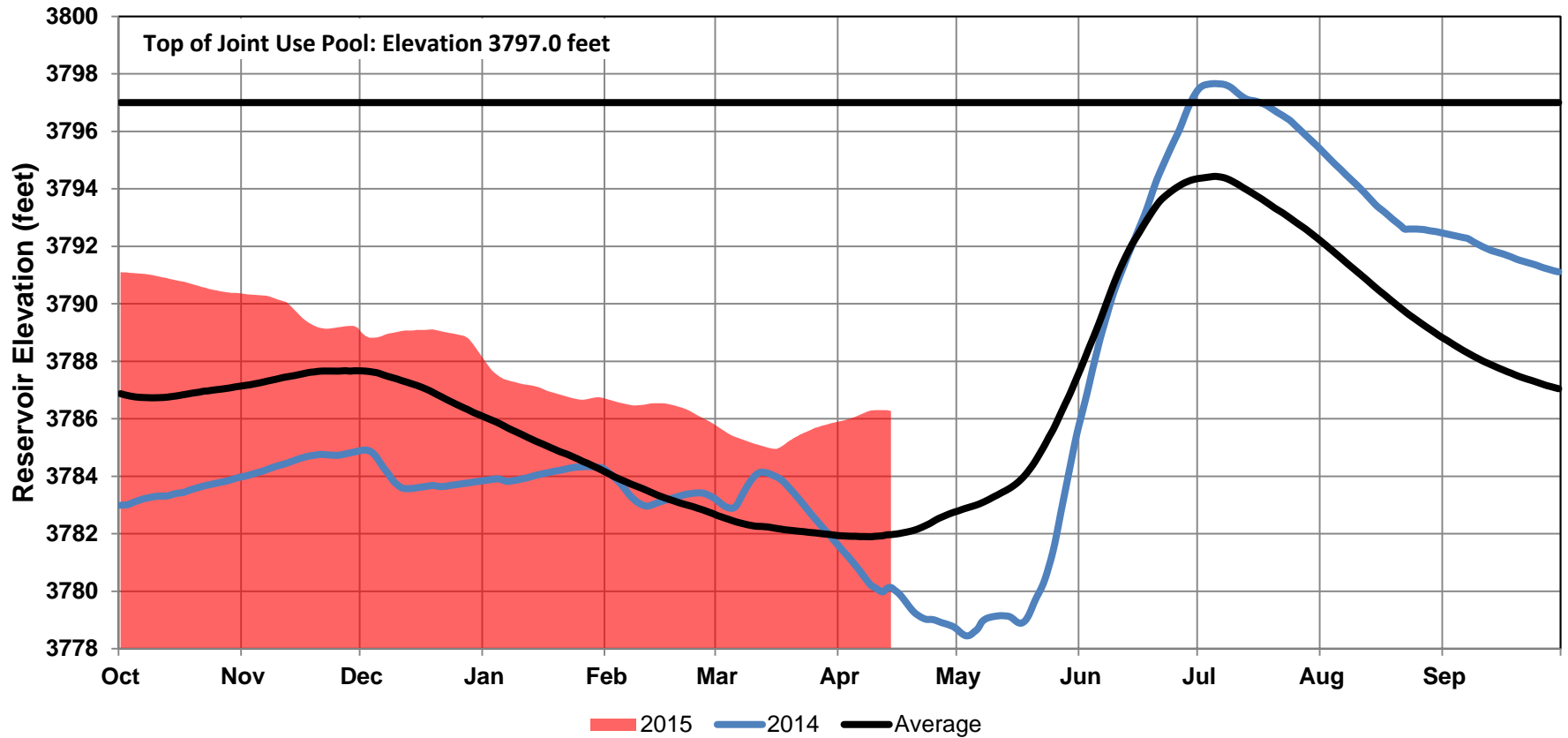


Snowpack above Canyon Ferry Reservoir

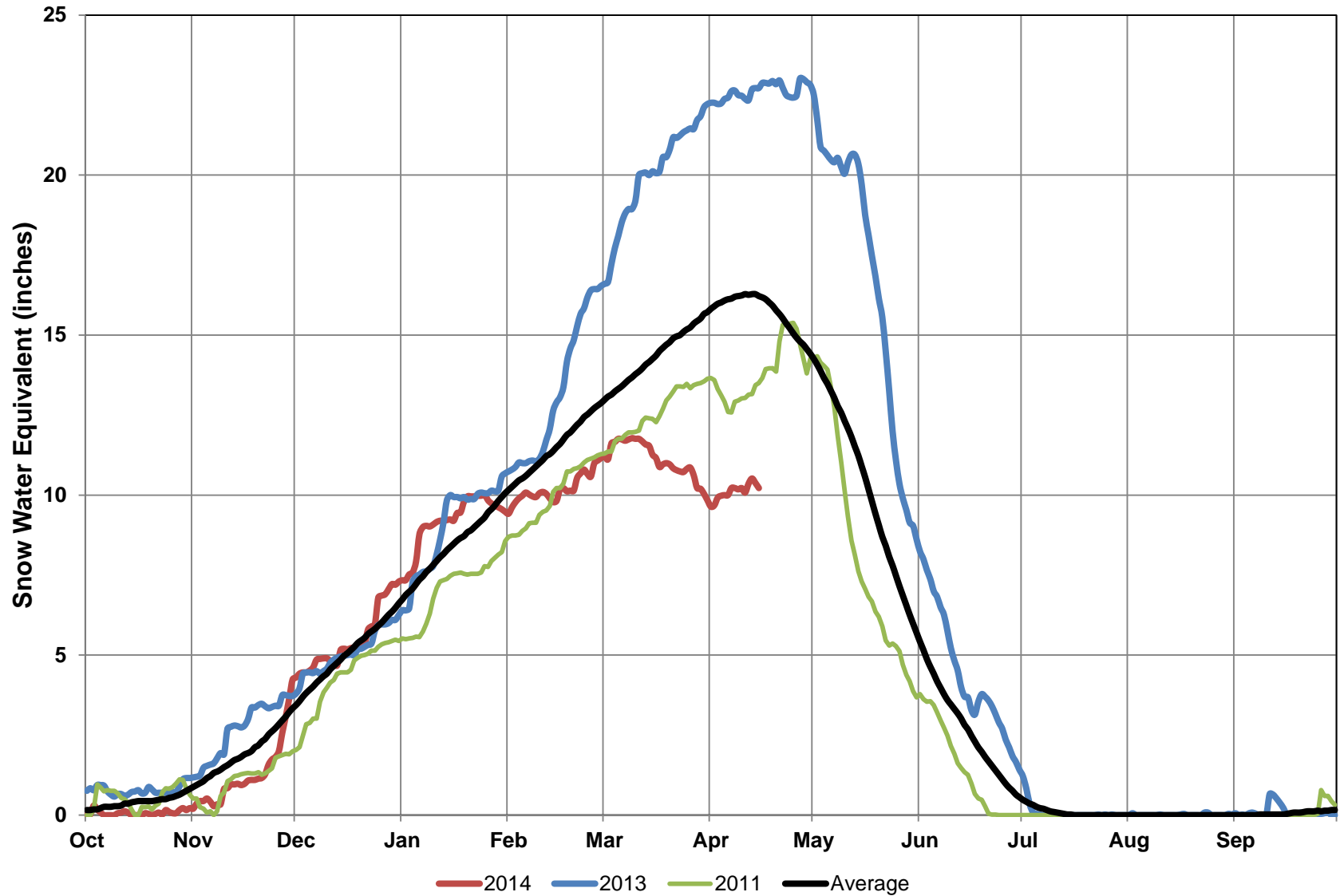


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Canyon Ferry Reservoir Operations

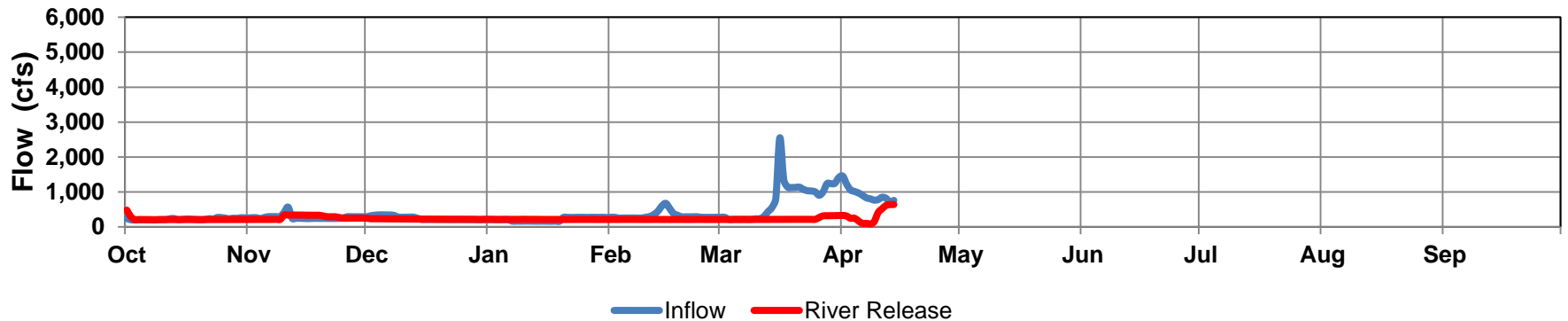
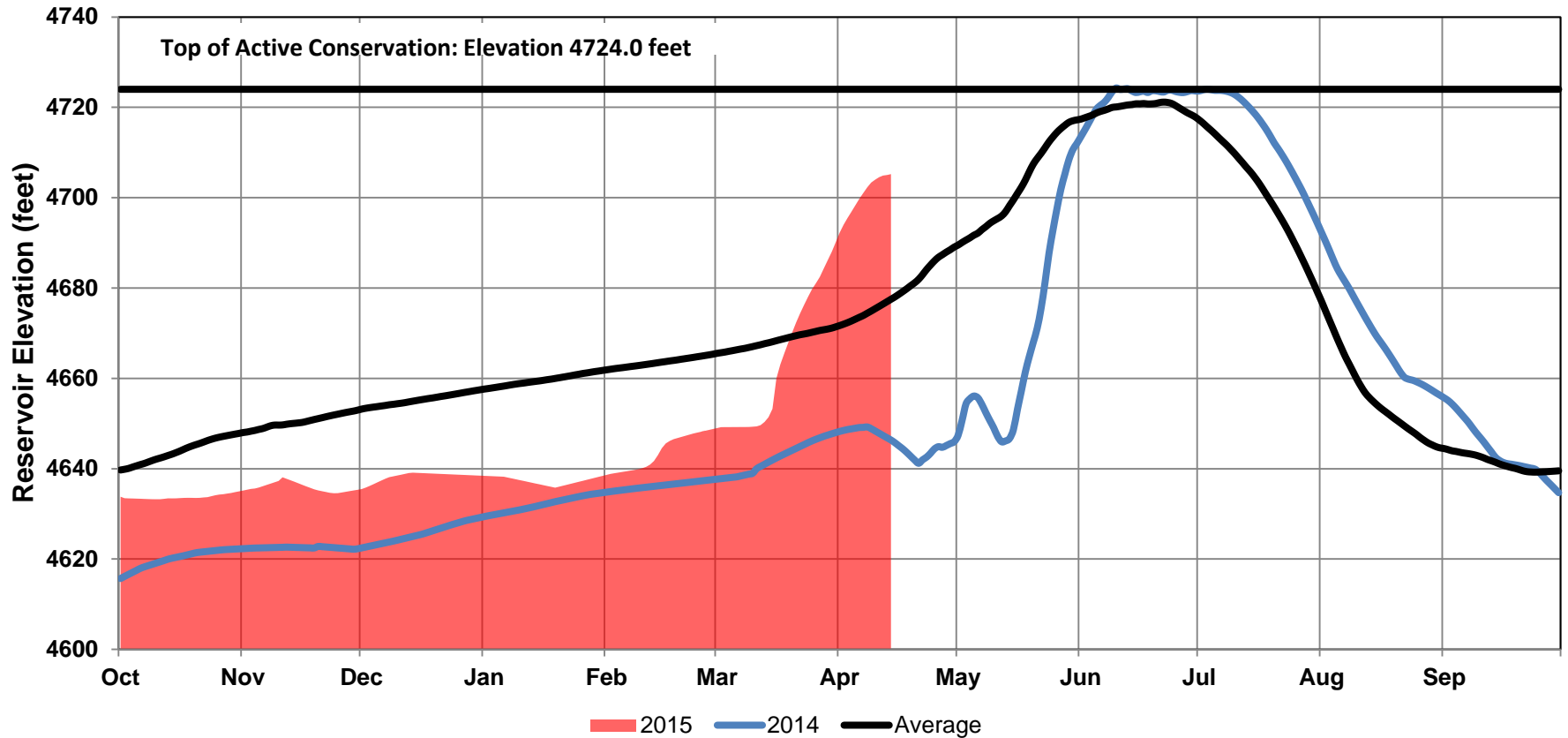


Snowpack above Gibson Reservoir

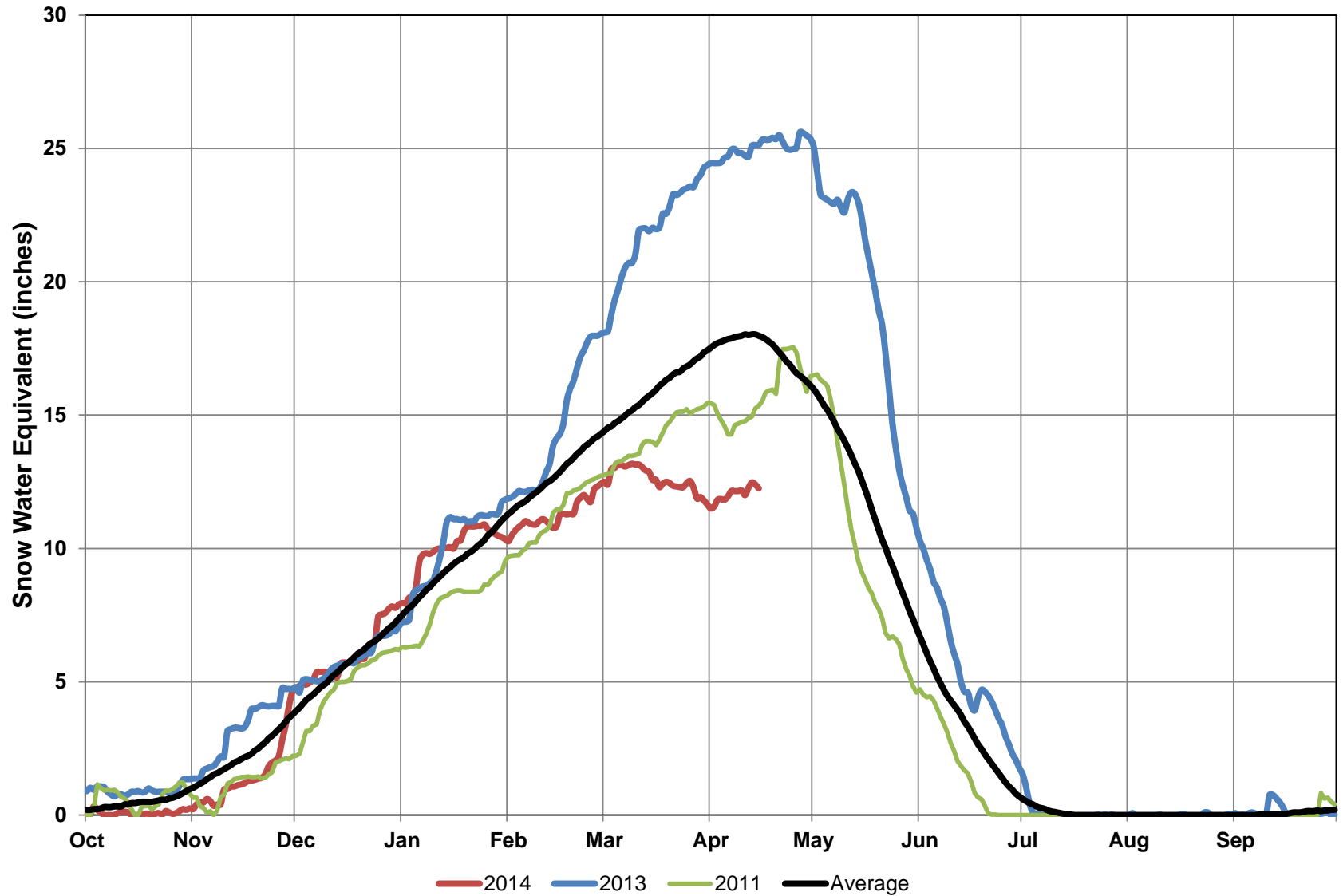


RECLAMATION

Gibson Reservoir Operations

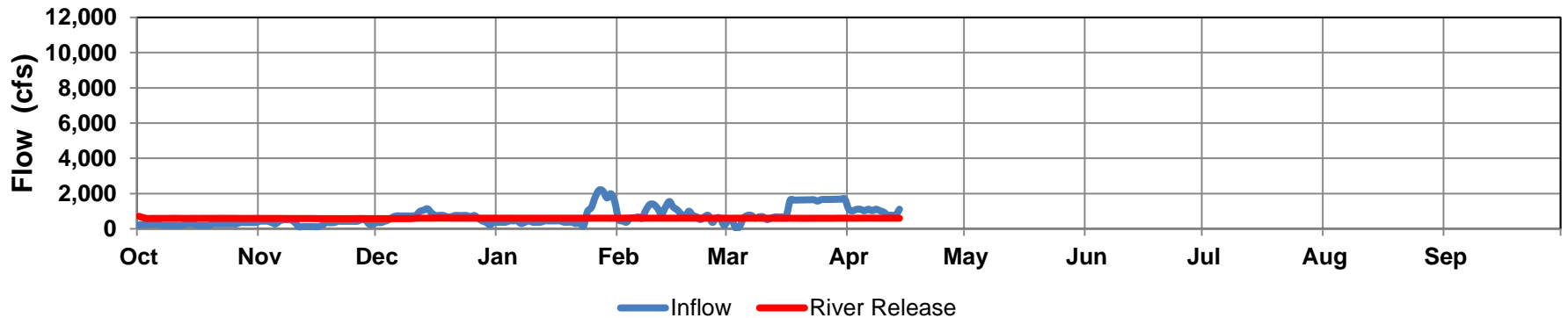
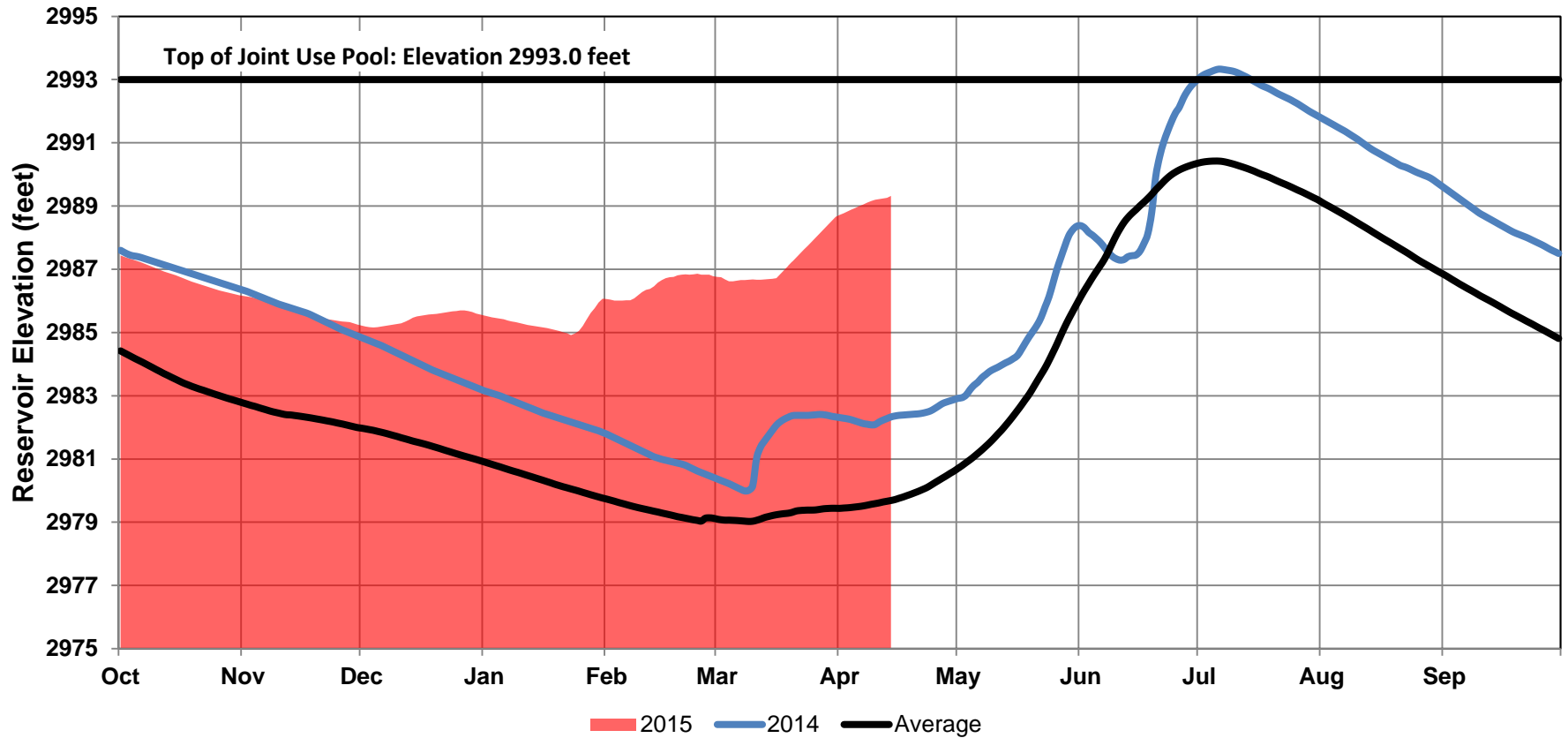


Snowpack above Lake Elwell

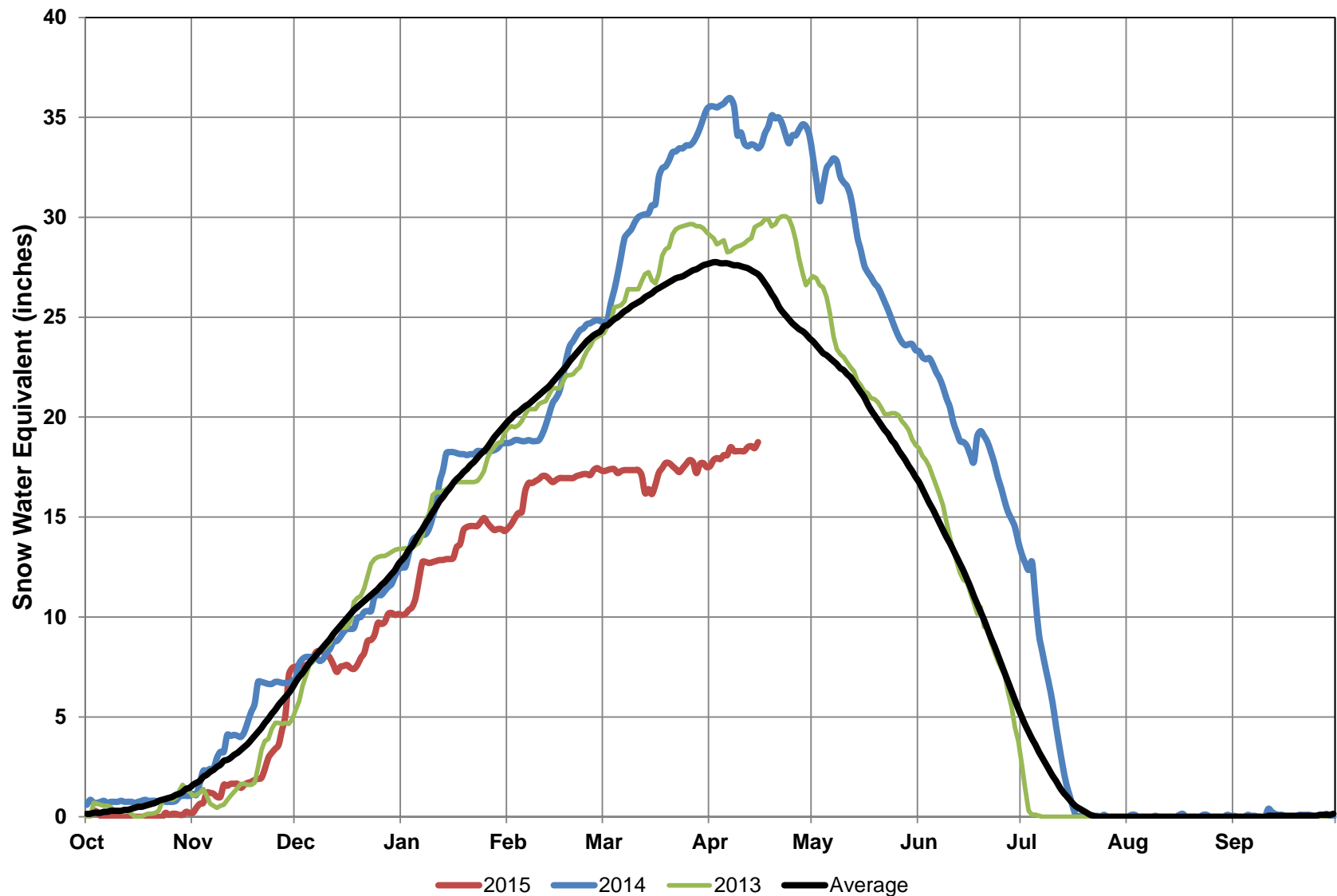


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Lake Elwell (Tiber Dam) Operations

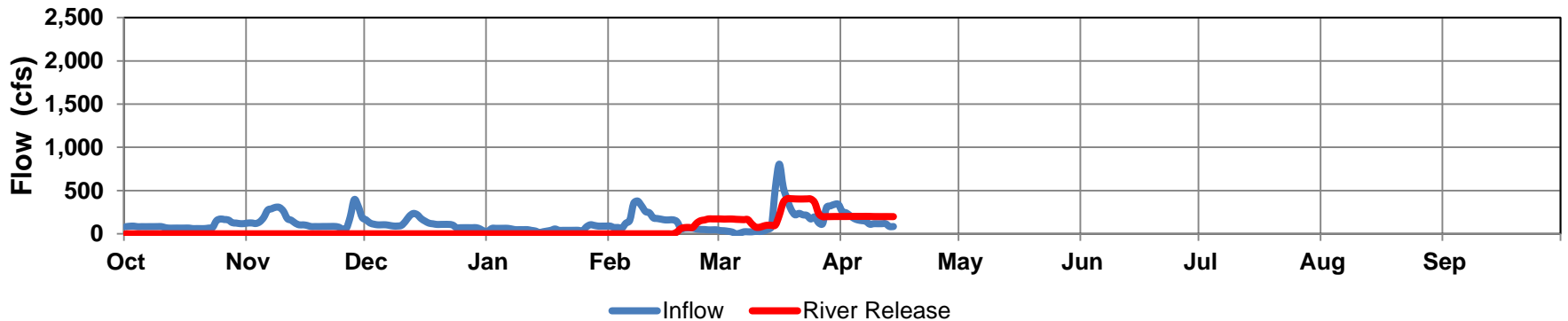
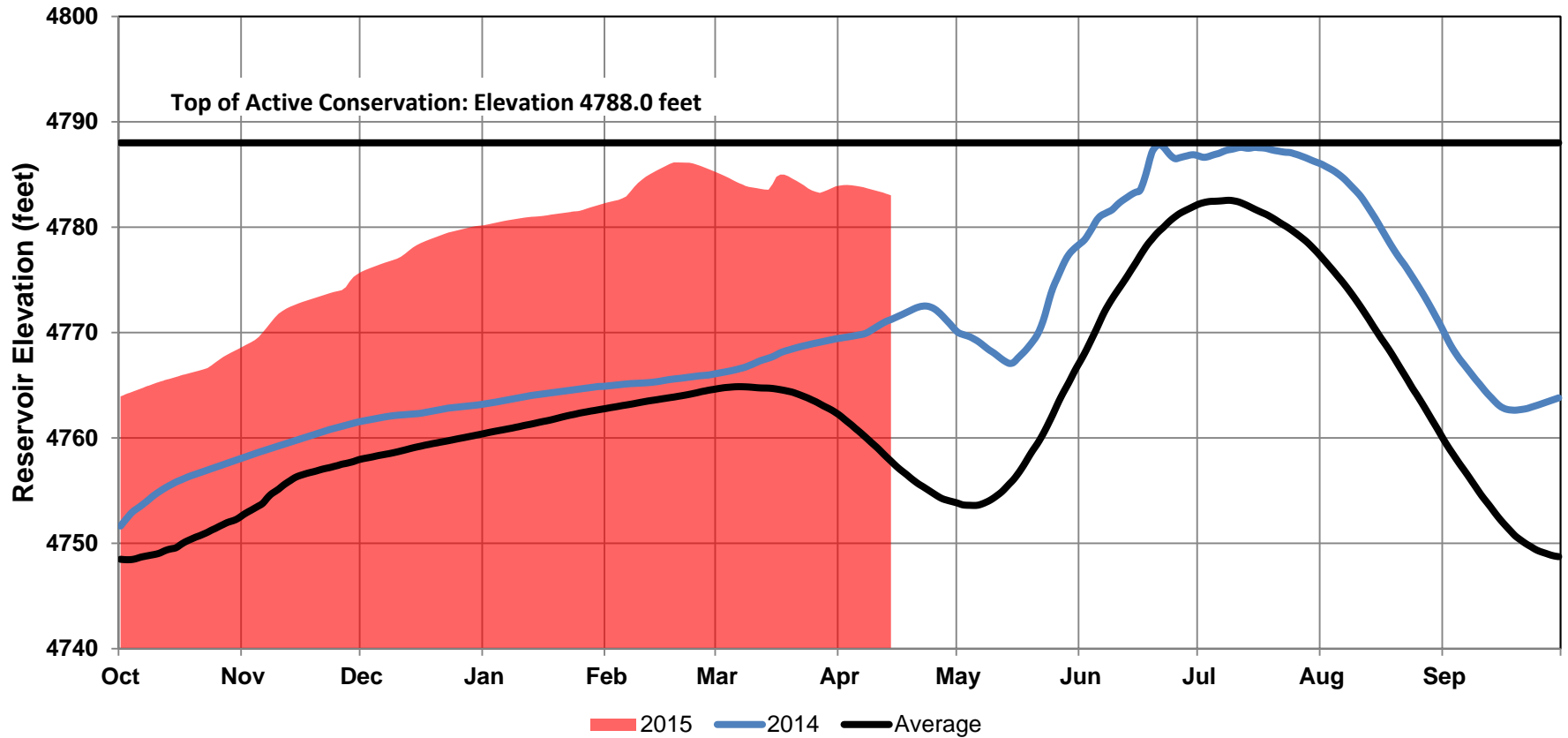


Snowpack above Lake Sherburne

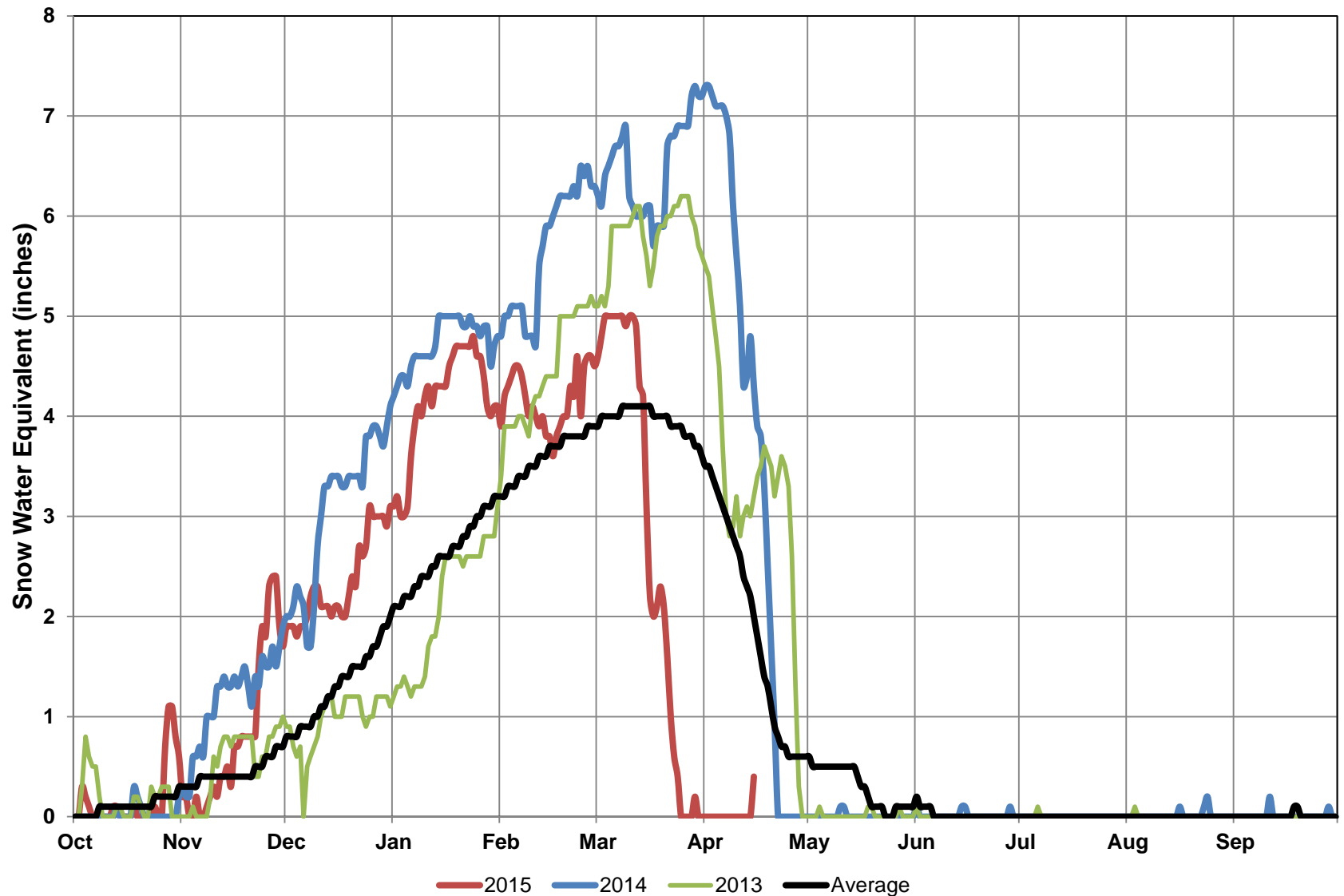


RECLAMATION

Lake Sherburne Operations

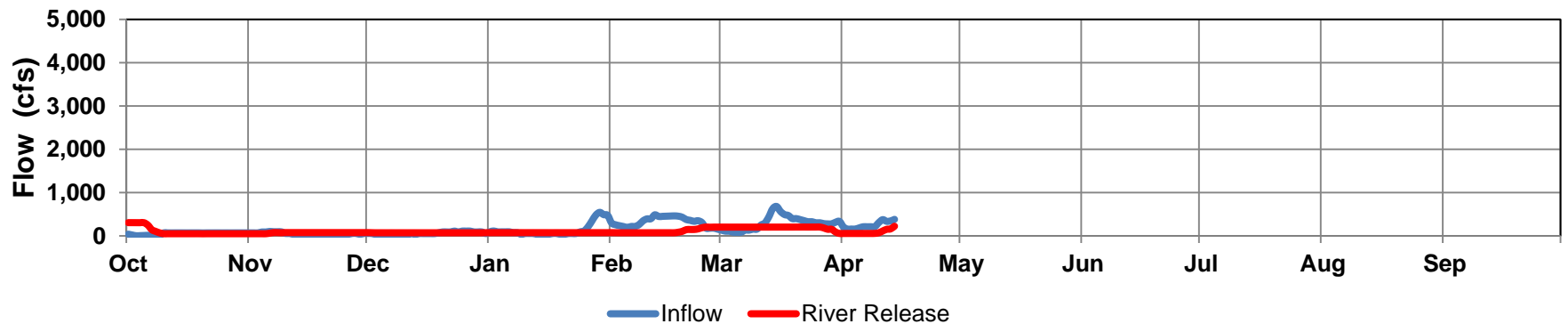
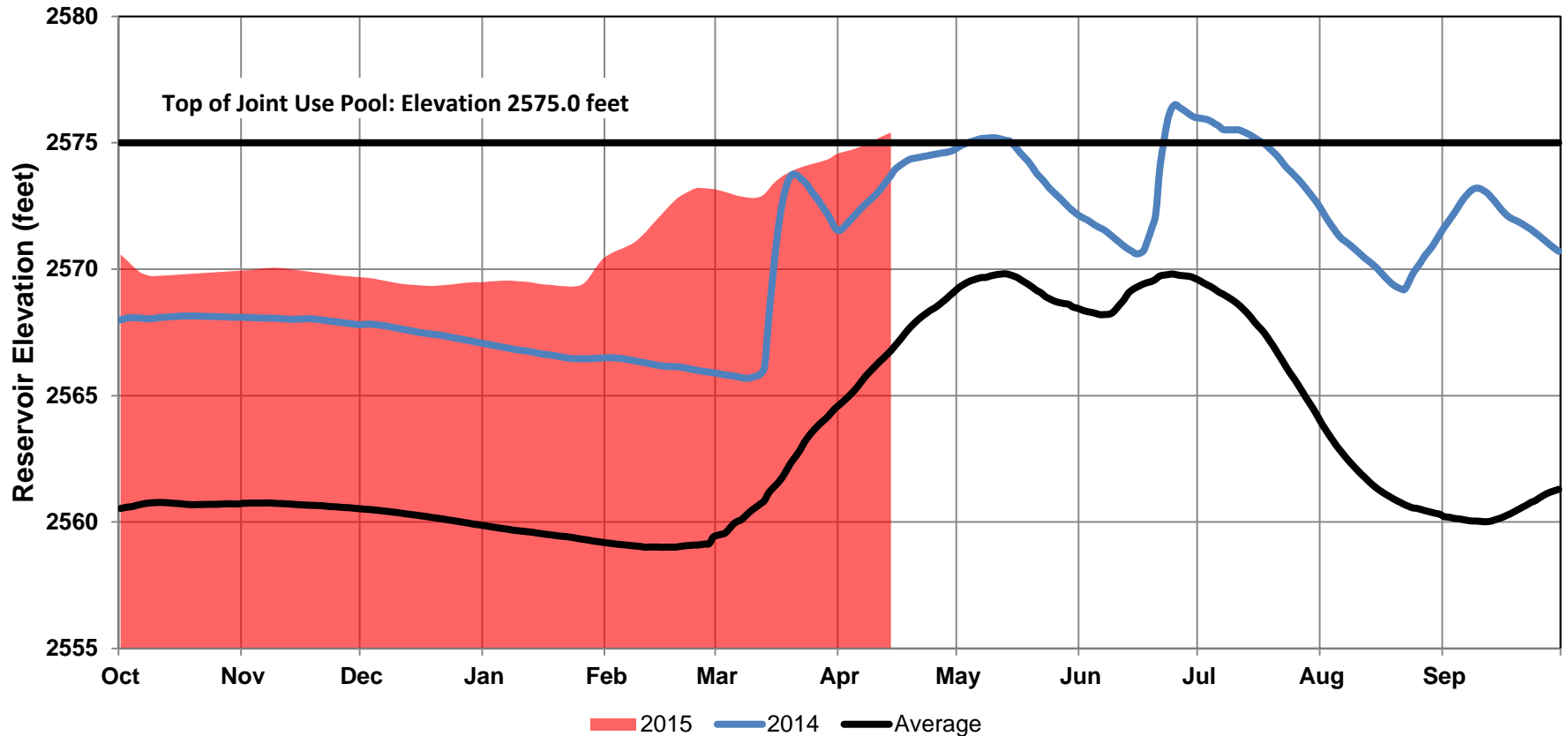


Snowpack above Fresno Reservoir

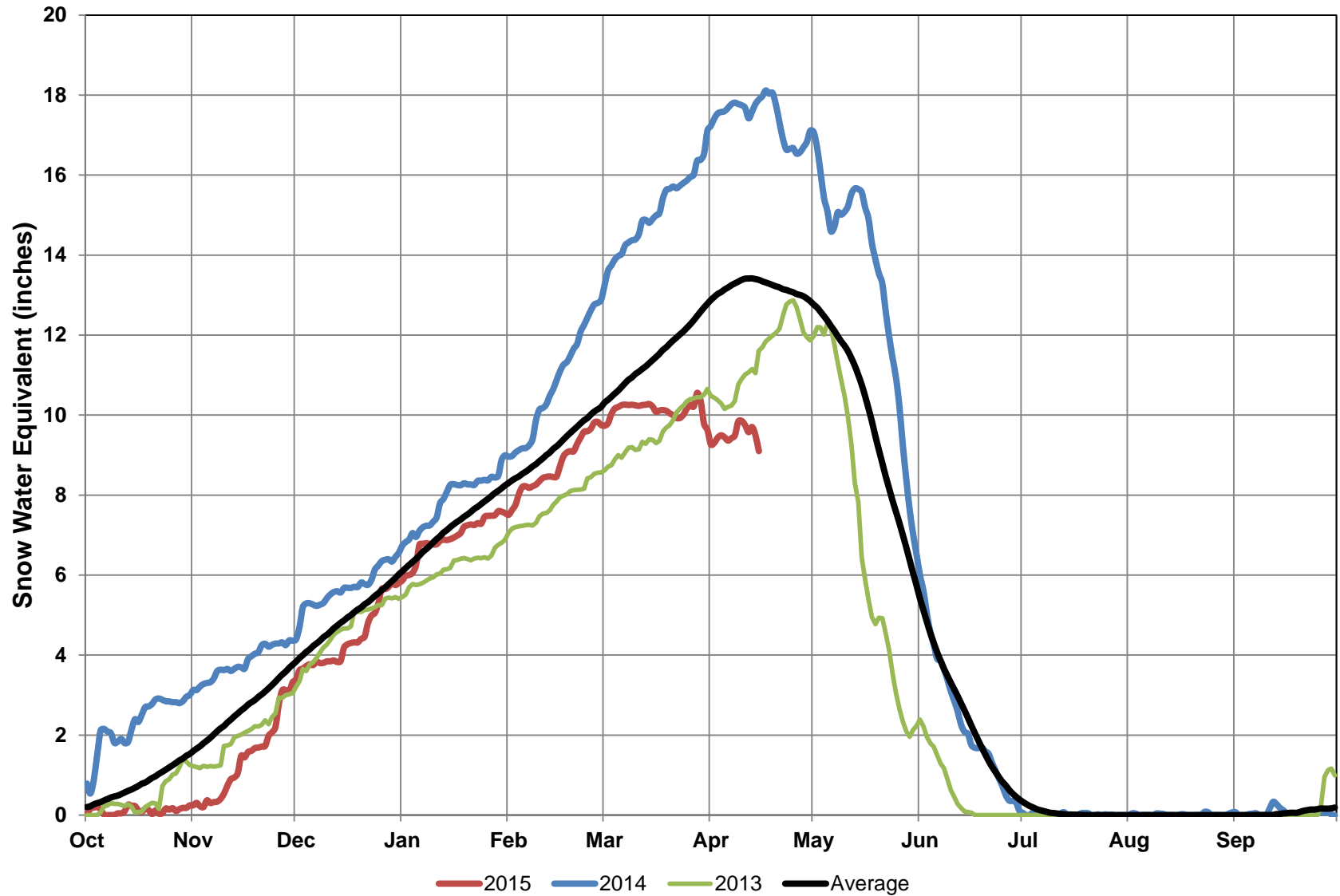


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Fresno Reservoir Operations

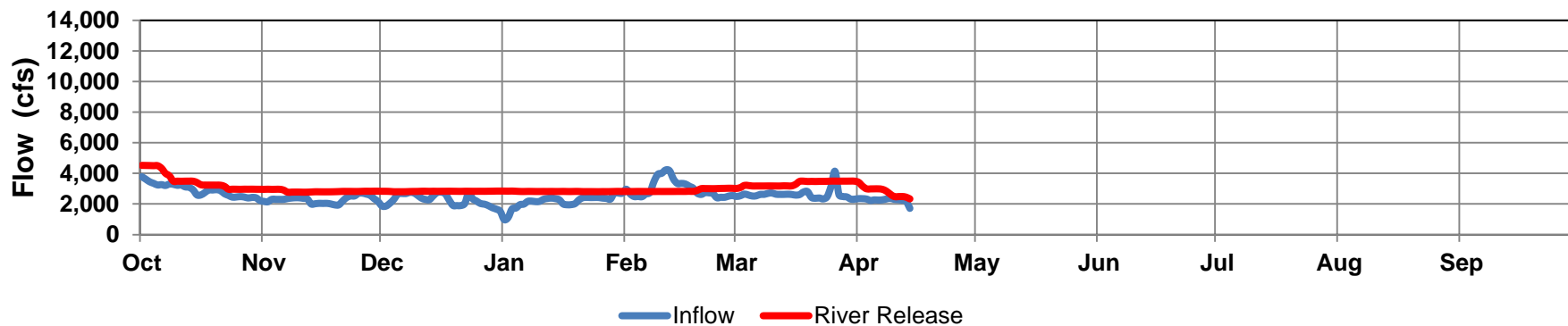
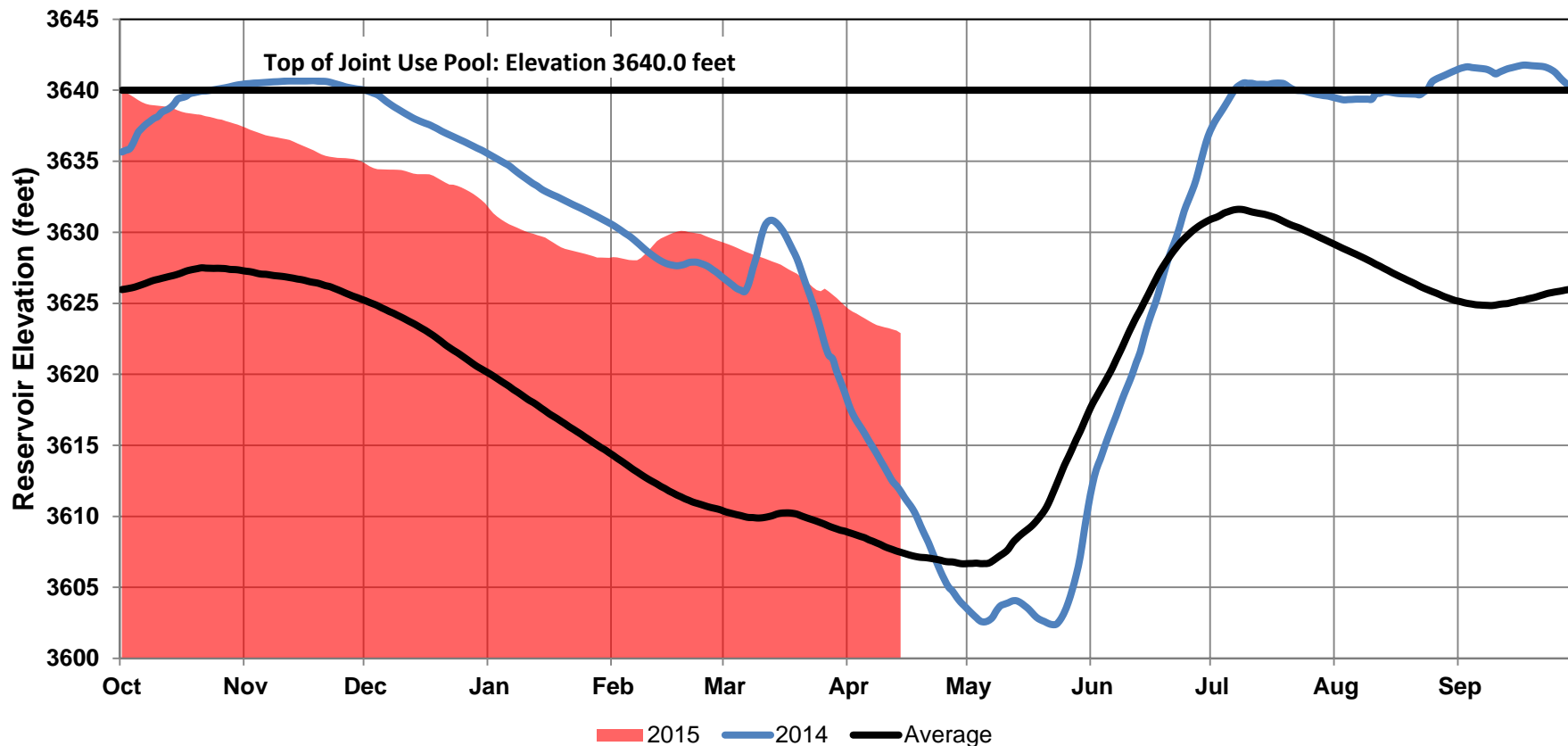


Snowpack above Bighorn Lake



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Bighorn Lake (Yellowtail Dam) Operations



Summary of Conditions

- Releases at most reservoirs have been decreased to conserve storage to ensure of filling.
- Recent rain and snow storms have sustained snowpack.
- Reservoirs not anticipated to fill – Clark Canyon, Yellowtail Dam, Canyon Ferry
- Reduced Irrigation Allotments – EBJB & GID

RECLAMATION

Reclamation's Internet Website

<http://www.usbr.gov/gp/hydromet/>

- near real-time data available through the HYDROMET data system
- summaries and plots of historical data
- annual reservoir operating plan publication
- monthly water supply reports
- project data
- snow plots
- links to related internet sites

RECLAMATION

Reservoir Storage Outlook

April 16, 2015

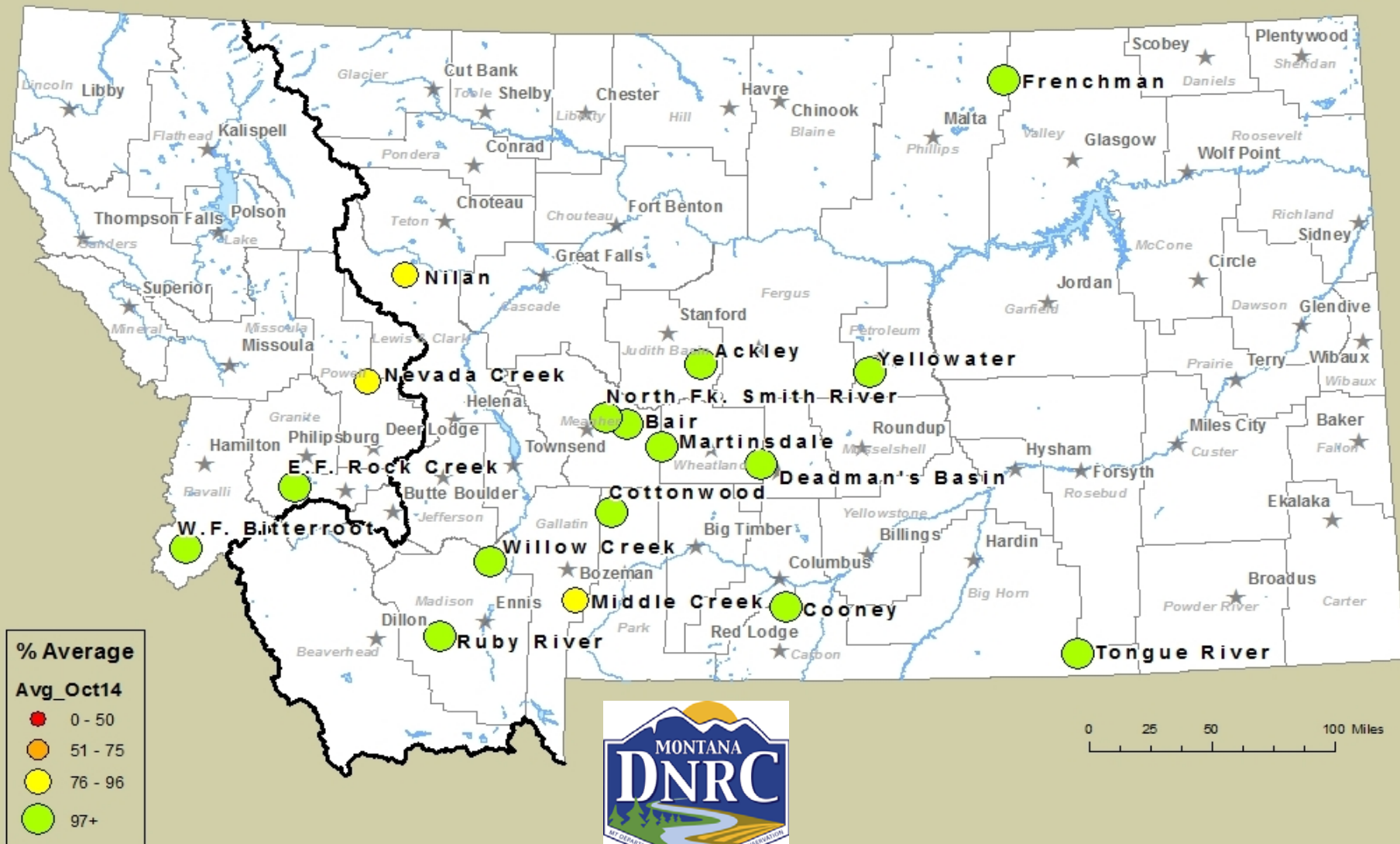


DNRC Water Resources Division
State Water Projects Bureau

Montana DNRC State Water Projects Bureau Reservoirs

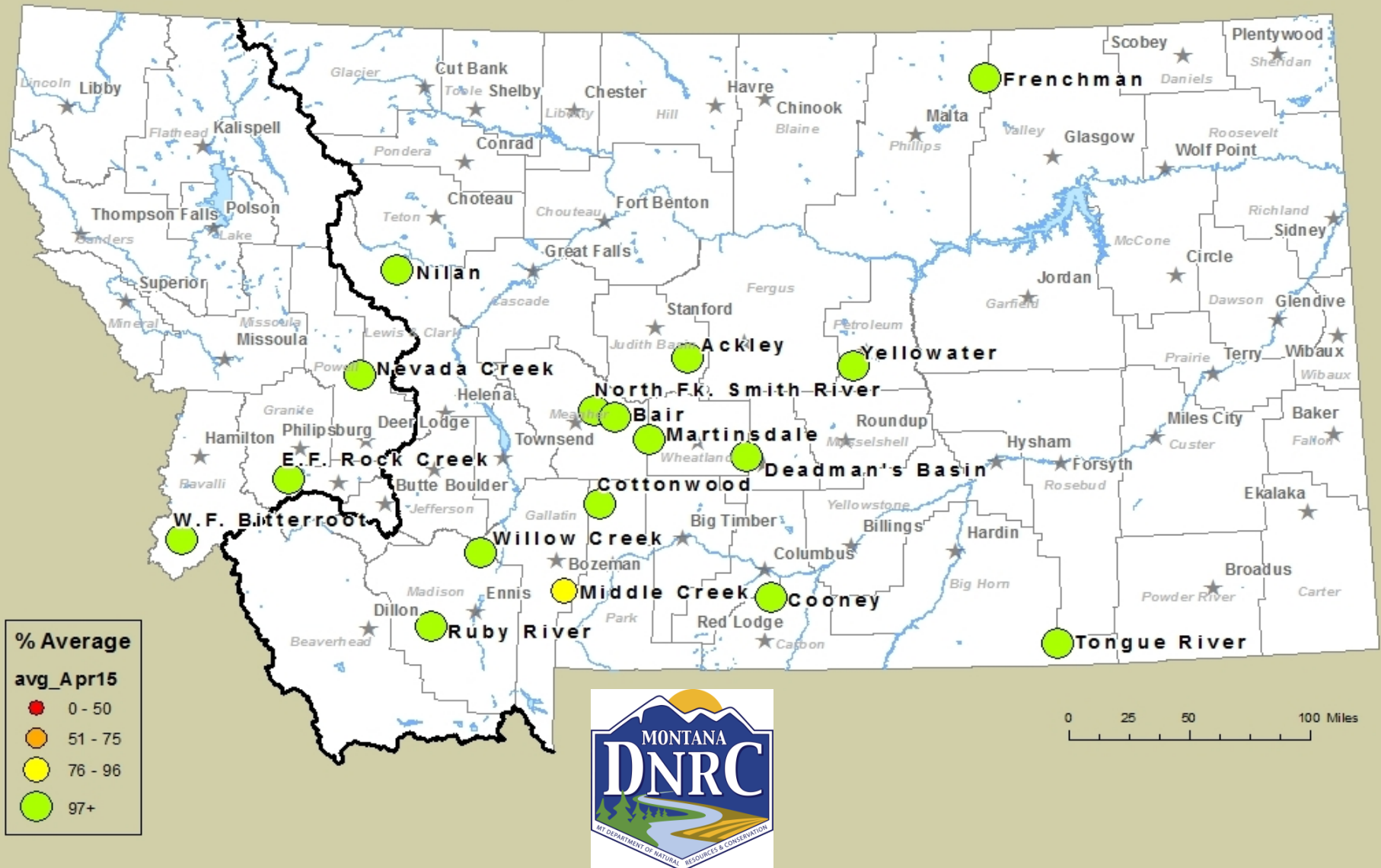


Reservoir Contents Report October 16, 2014



Reservoir Contents Report

April 16, 2015



MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

WATER RESOURCES DIVISION - STATE WATER PROJECTS BUREAU

March 31, 2015

All Contents in Acre-Feet

RESERVOIR	TOTAL CAPACITY (includes dead storage)*	CONTENTS				% CAPACITY	% AVERAGE	READING DATE	COMMENTS
		AVERAGE	Last Year	Last Month	PRESENT				
		1960 - 2014	3/31/2014	2/28/2015	3/31/2015				
	Full Pool								
	Contents								
ACKLEY	6,722	3,231	4,153	3,851	3,997	59	124	3/31/2015	elev.= 4306.25
BAIR	7,300	4,373	3,773	5,200	5,609	77	128	3/31/2015	elev.=5318.28
COONEY	28,230	20,912	21,461	20,311	22,280	79	107	4/3/2015	elev.=4243.8 (22,190 AF)
COTTONWOOD	1,900	1,014	1,596	1,284	1,940	102	191	3/16/2015	elev.= 5102.64
DEADMAN'S BASIN	75,968	49,256	56,444	65,930	70,577	93	143	3/30/2015	elev.=3918.3 (66,827 AF)
E.F. ROCK CREEK	16,040	9,591	9,720	10,589	11,045	69	115	3/30/2015	elev.=6041.7
FRENCHMAN	2,777	2,156	2,777	2,777	2,777	100	129	3/31/2015	spilling
MARTINSDALE	23,348	9,135	7,344	17,937	19,337	83	212	3/30/2015	elev.=4775.0
MIDDLE CREEK	10,184	6,163	4,499	5,418	5,818	57	94	3/30/2015	elev.=6699.3
NEVADA CREEK	11,207	7,819	6,521	9,574	10,861	97	139	3/29/2015	elev.=4615.05
NILAN	10,992	6,707	6,391	8,532	10,020	91	149	3/31/2015	elev.=4440.67
N.F.K. SMITH RIVER	11,406	7,082	8,148	9,000	10,330	91	146	3/31/2015	elev.= 5484.8
RUBY RIVER	37,612	31,222	34,501	34,212	37,137	99	119	3/30/2015	elev.=5392.5
TONGUE RIVER	79,071	50,139	60,558	52,106	56,093	71	112	3/30/2015	elev.=3421.5
W.F. BITTERROOT	32,362	9,221	14,125	13,528	20,019	62	217	3/27/2015	elev.=4703.71
WILLOW CREEK	18,000	16,386	16,183	14,300	16,127	90	98	3/25/2015	elev.= 4733.6
YELLOWATER	3,842	1,250	3,496	3,106	3,236	84	259	3/31/2015	elev.=3116.9

* Note: Reservoir contents include dead storage at the following:

Ackley	1001 AF	**	O&M slope storage table does not include dead storage (so dead storage has to be added into the storage from the table)
Cooney	90 AF	**	Tongue River 711 AF (O&M storage table includes dead storage)
Deadman's	3750 AF	**	W. F. Bitterroot 656 AF (O&M storage table includes dead storage)
Nilan	900 AF	**	Willow Creek 269 AF (O&M storage table includes dead storage)

* Note: Cooney capacity reflects capacity after 1982 dam rehabilitation; prior capacity was 24,195 A.F.. Average storage shown is for post rehabilitation data.

* Note: Middle Creek capacity reflects capacity after 1993 dam rehabilitation; prior capacity was 8,027 A.F.. Average storage shown is for post rehabilitation data.

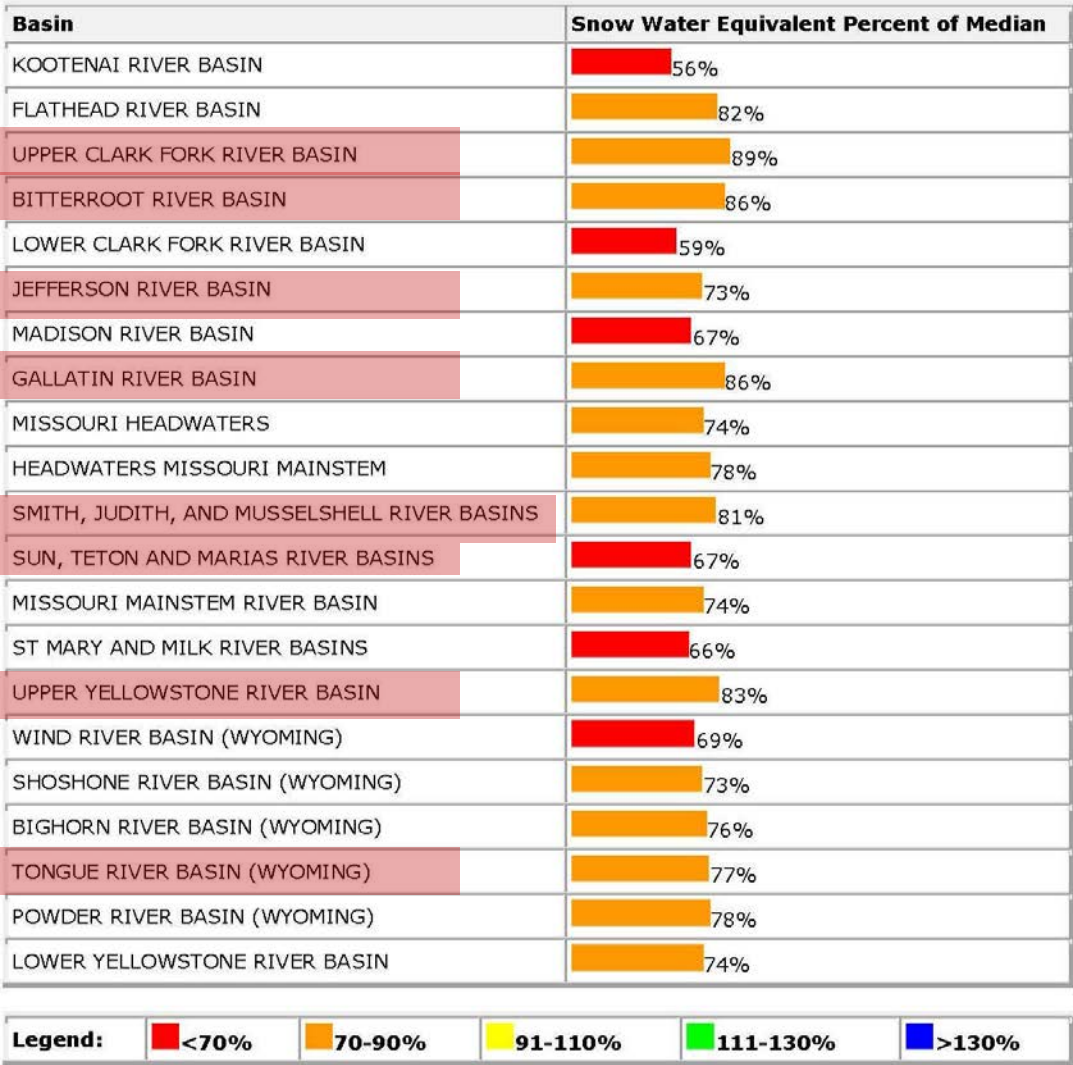
* Note: Nevada Creek Reservoir Capacity reflects live storage capacity survey conducted in year 2000. Prior live storage capacity documented as 12,723 AF.

* Note: Tongue River capacity reflects capacity after 1999 dam rehabilitation; prior capacity was 68,040 A.F.. Average storage is post rehabilitation data.

* Note: Frenchman Reservoir capacity tables updated based on aerial survey; prior capacity was 3752 A.F. Average shown is pre aerial survey

MONTANA SNOTEL Snow Water Equivalent Update Graph

As of **TUESDAY: APRIL 14 , 2015**

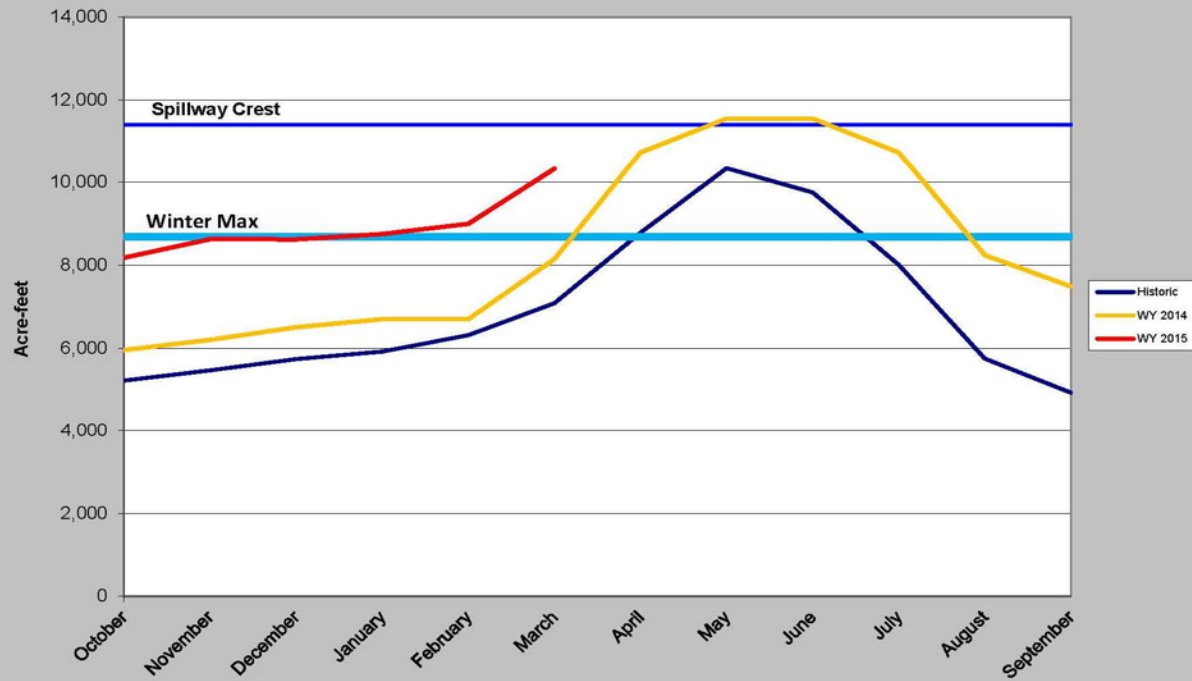


Montana DNRC State Water Projects Bureau Reservoirs



North Fork Smith River

(Historic, WY 2014, and WY 2015)



- 91% Capacity
- 146% average
- 10,330 Acre-Feet

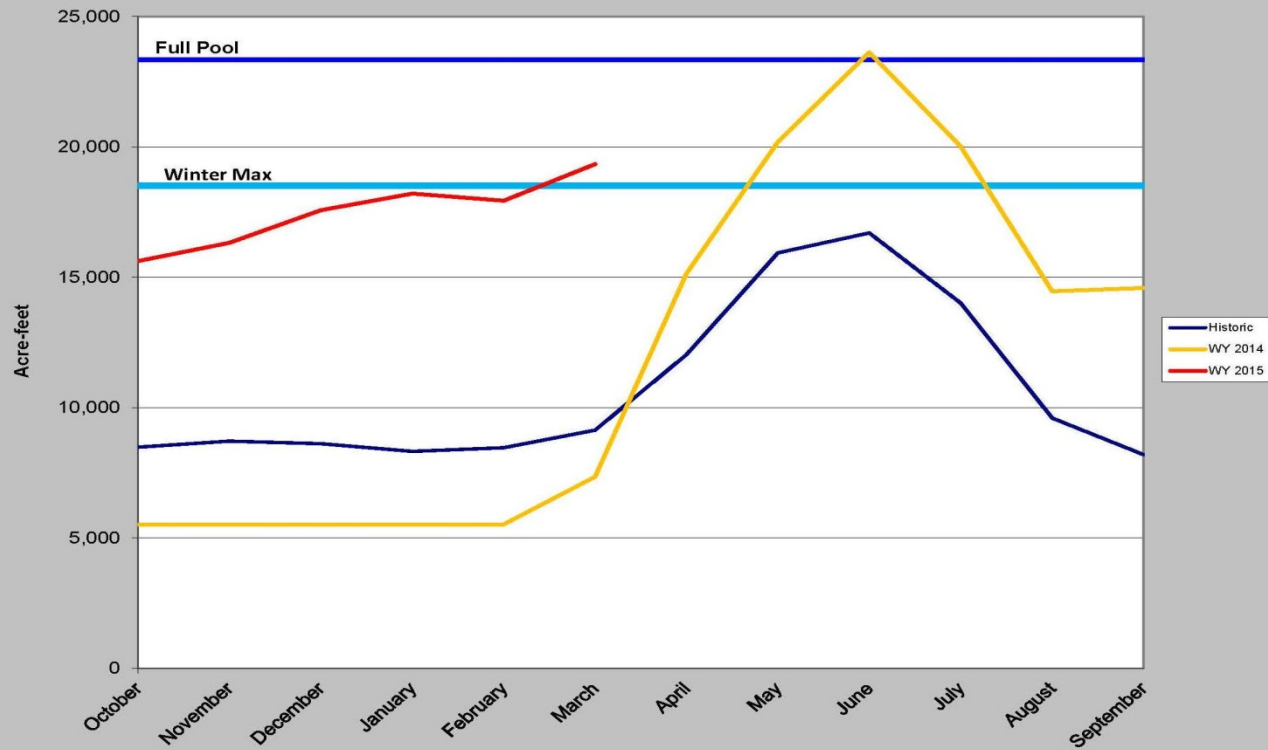


Montana DNRC State Water Projects Bureau Reservoirs



Martinsdale Reservoir

(Historic, WY 2014, and WY 2015)



- 83% Capacity
- 212% average
- 19,337 Acre-Feet
- Inflows~65 cfs
- Outflows=0 cfs

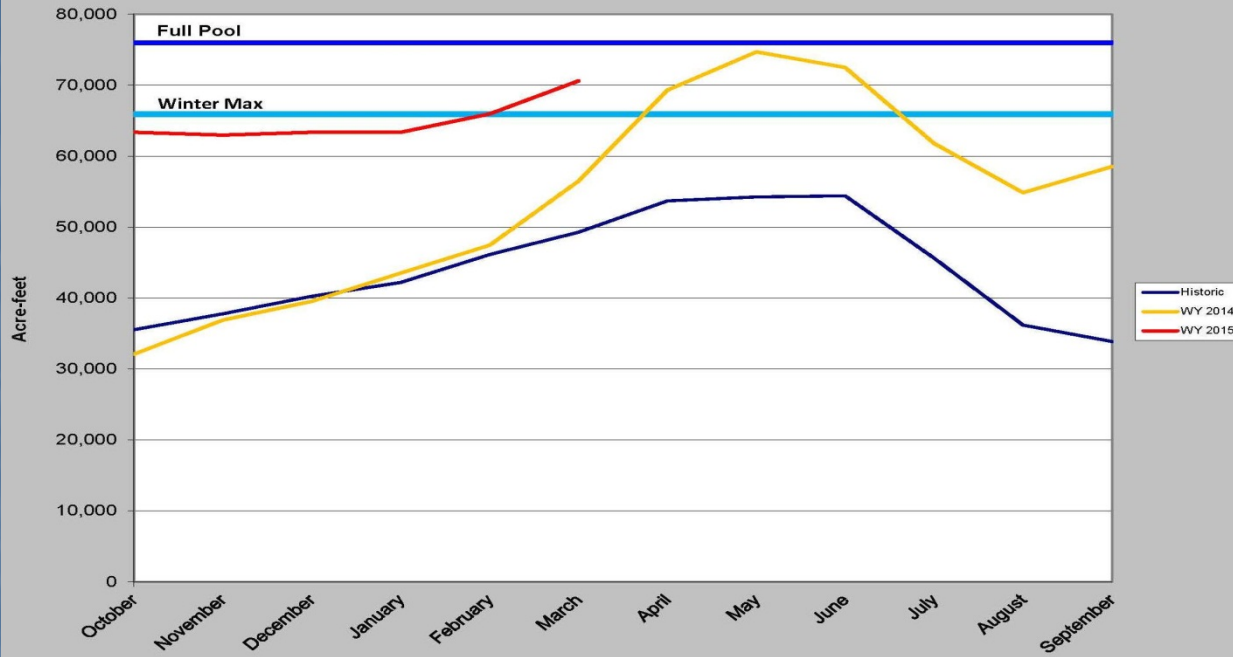


Montana DNRC State Water Projects Bureau Reservoirs



Deadman's Basin

(Historic, WY 2014, and WY 2015)



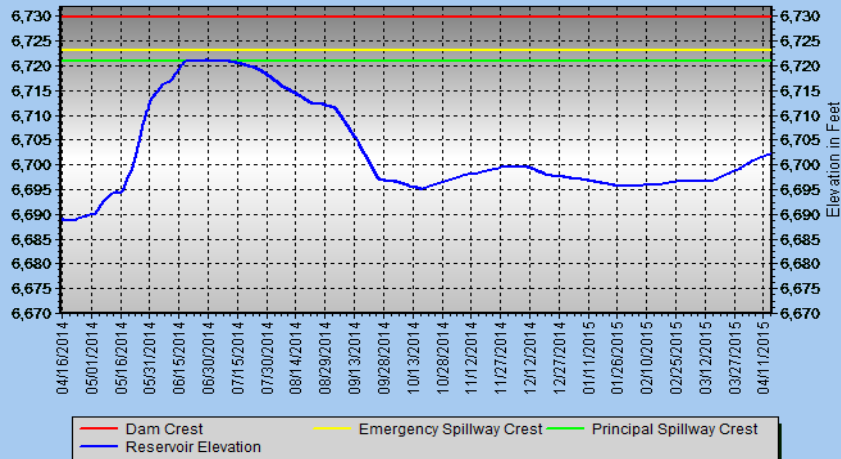
- 93% Capacity
- 143% average
- 70,577 Acre-Feet
- Elev.=3918.3
- Inflow~115 cfs



Montana DNRC State Water Projects Bureau Reservoirs



MIDDLE CREEK DAM RESERVOIR ELEVATION — 365 DAYS



TIME OF LAST READING 4/15/2015 8:00:00 AM

RESERVOIR ELEVATION 6,702.4 FT

RESERVOIR VOLUME 6,295 AF

MIDDLE CREEK BELOW DAM 11.1 CFS

TIME OF LAST READING 4/14/2015 4:45:00 PM

REFERENCE INFORMATION

FT (MSL)

AC-FT

DAM CREST

6730.0

12,790

EMERGENCY SPILLWAY CREST

6723.0

10,707

PRINCIPAL SPILLWAY CREST

6721.0

10,184

LOWEST USABLE ELEVATION

6637.0

0

*** PROVISIONAL DATA SUBJECT TO REVISION ***



- 62% Capacity
- 102% Average
- Outflows~11 cfs
- 6,295 Acre-Feet
- Elev.=6702.4

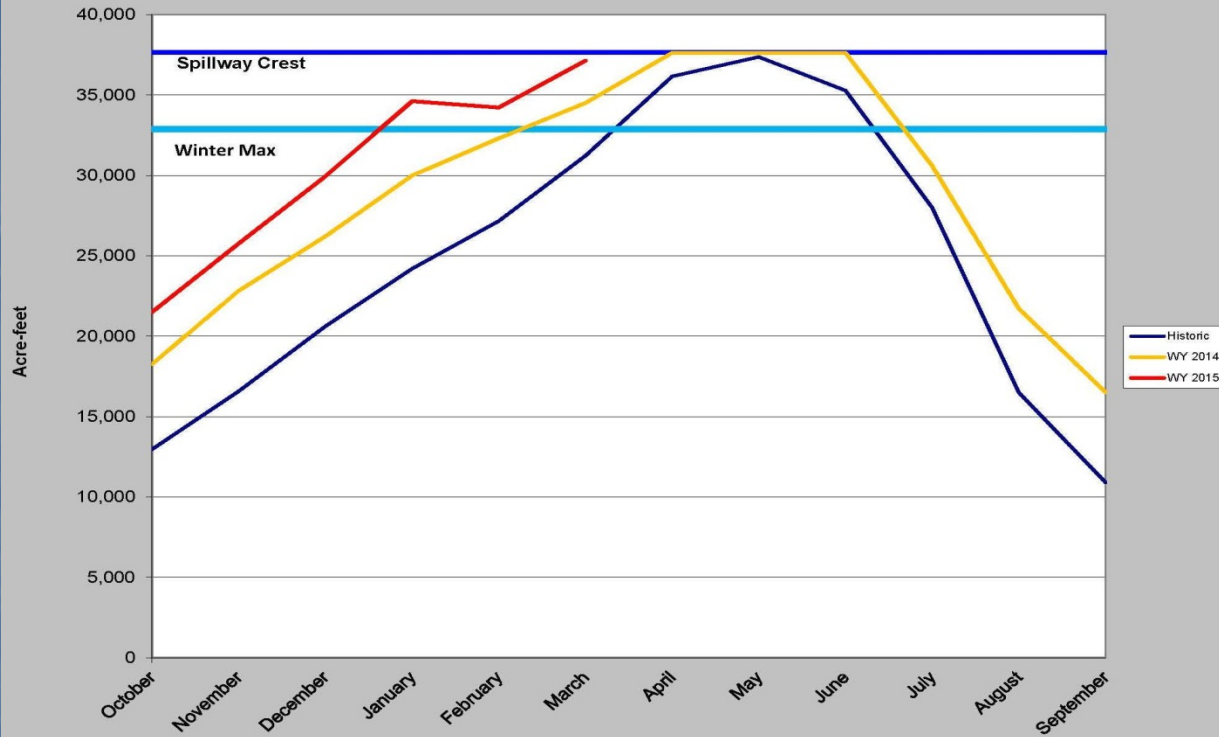


Montana DNRC State Water Projects Bureau Reservoirs



Ruby Reservoir

(Historic, WY 2014, and WY 2015)



- 100% Capacity
- 120% average
- 37,612 Acre-Feet
- Elev.=5393.0
- Inflows=129 cfs
- Outflows=114 cfs

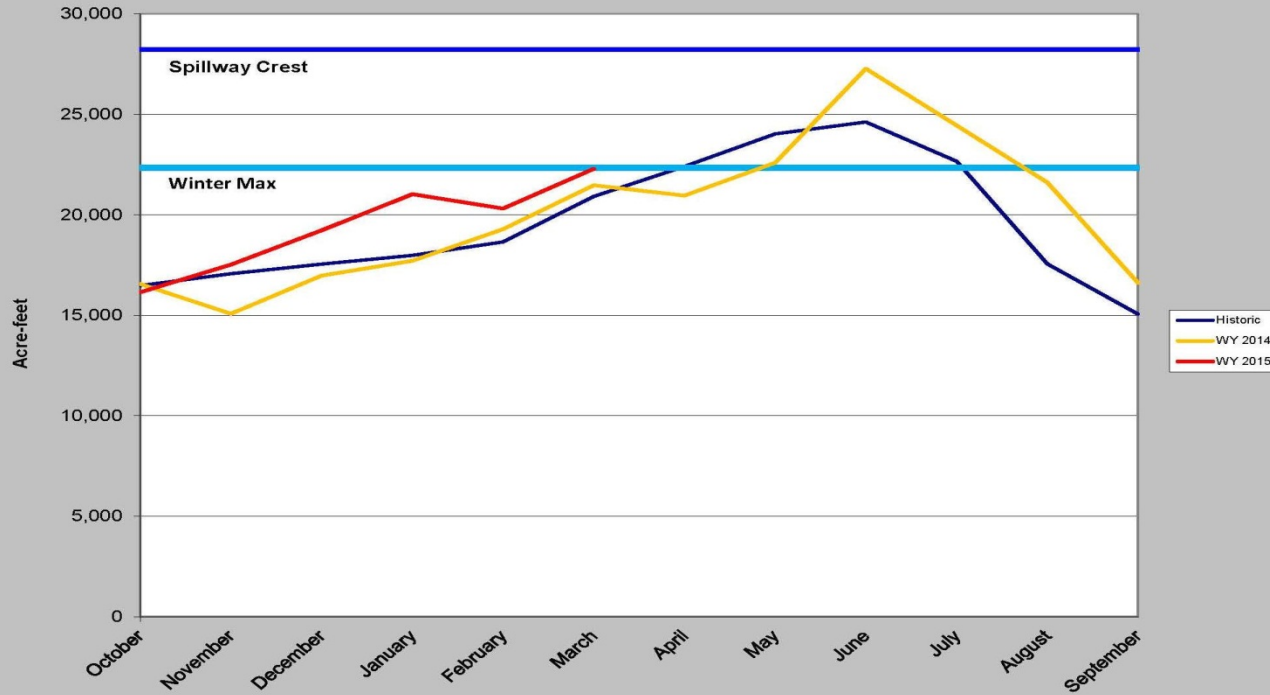


Montana DNRC State Water Projects Bureau Reservoirs



Cooney Reservoir

(Historic, WY 2014, and WY 2015)

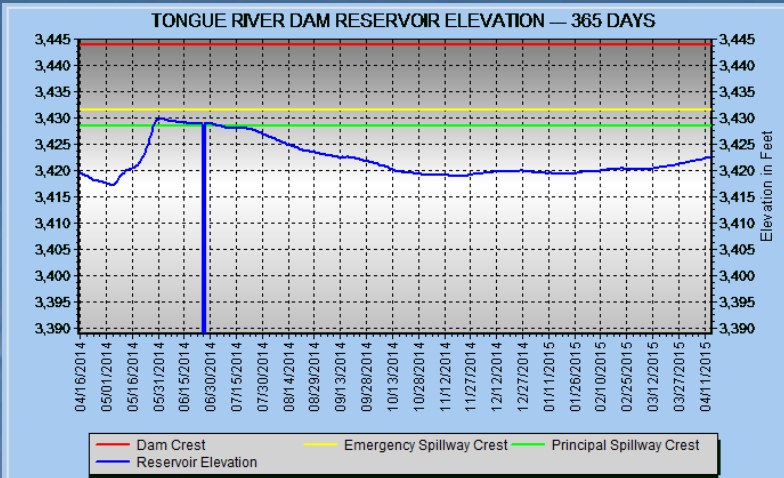


- 79% Capacity
- 107% average
- 22,280 Acre-Feet
- Elev.=4243.8
- Inflows= 68 cfs
- Outflows=15.2 cfs



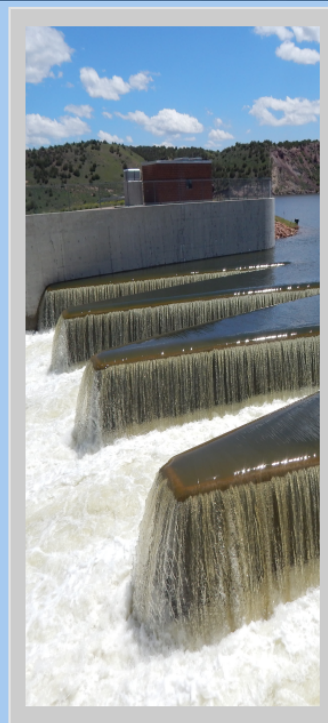
Montana DNRC State Water Projects Bureau Reservoirs





TIME OF LAST READING	4/15/2015 5:00:00 AM	REFERENCE INFORMATION	FT (MSL)	AC-FT
RESERVOIR ELEVATION	3,422.6 FT	DAM CREST	3444.0	150,000
RESERVOIR VOLUME	59,548 AF	EMERGENCY SPILLWAY CREST	3431.5	91,107
PRIMARY GATE	5.0%	PRINCIPAL SPILLWAY CREST	3428.4	79,071
SECONDARY GATE	1.0%	TOP OF LOW LEVEL INTAKE	3390.0	6,656

*** PROVISIONAL DATA SUBJECT TO REVISION ***



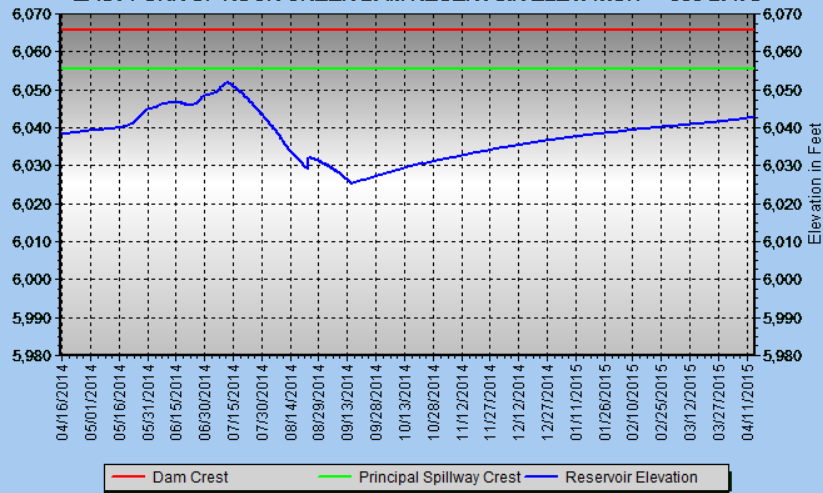
- 75% Capacity
- 119% Average
- 59,548 Acre-Feet
- Elev.=3422.6
- Inflows=243 cfs
- Outflows=95 cfs



Montana DNRC State Water Projects Bureau Reservoirs



EAST FORK OF ROCK CREEK DAM RESERVOIR ELEVATION — 365 DAYS



TIME OF LAST READING 4/15/2015 5:00:00 AM

RESERVOIR ELEVATION 6,042.7 FT

RESERVOIR VOLUME 11,382 AF

REFERENCE INFORMATION	FT (MSL)	AC-FT
DAM CREST	6065.6	19,850
PRINCIPAL SPILLWAY CREST	6055.5	16,040
LOWEST USABLE ELEVATION	5989.7	0

*** PROVISIONAL DATA SUBJECT TO REVISION ***



- 71% Capacity
- 119% average
- 11,382 Acre-Feet
- Elev.=6042.7

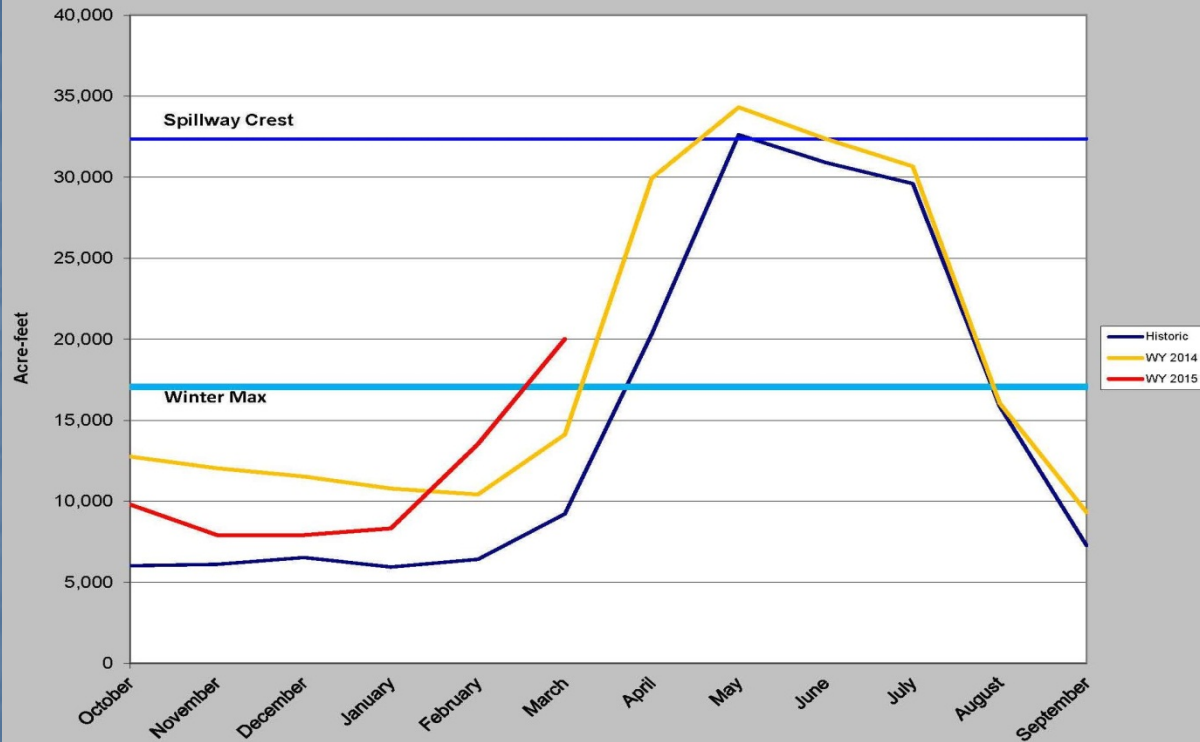


Montana DNRC State Water Projects Bureau Reservoirs



Painted Rocks Reservoir

(Historic, WY 2014, and WY 2015)



- 77% Capacity
- 269 % average
- 24,769 Acre-Feet
- Elev.=4712.69
- Inflows~305 cfs
- Outflows=308 cfs



Summary

- Maximum Winter Carryover was maintained across majority of State Water Projects
- Snowpack below to well below average
- State Water Projects Reservoirs are above to well above average for beginning of April and ahead of last year
- Warm winter temperatures provided early storage
- Dry conditions in conjunction with low snowpack may limit runoff storage potential
- Water Users are anticipating shortages due to snowpack conditions at select reservoirs

Montana Drought and Water Supply

Status change from October 2014 to April 2015 – Assessed 4/9/2015

(All changes one category unless otherwise noted)

Drier

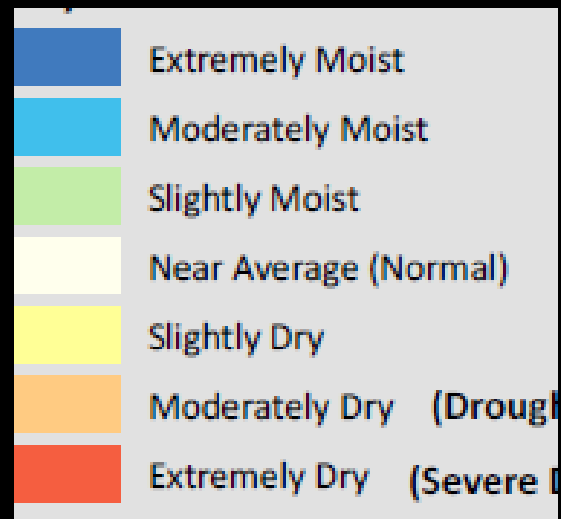
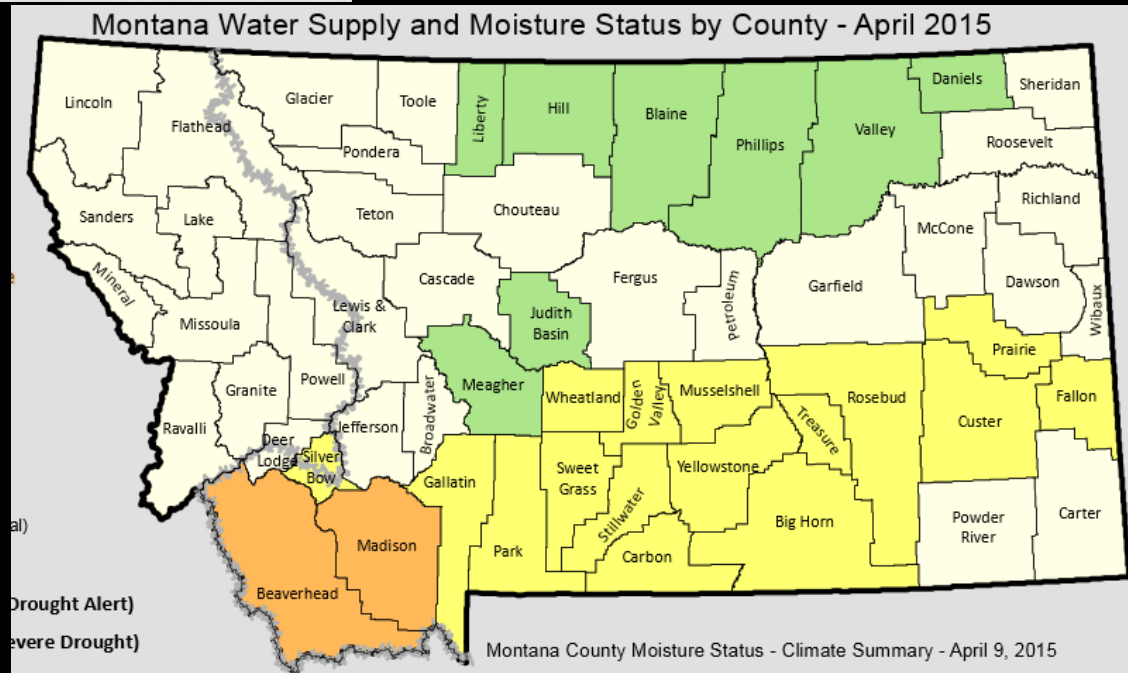
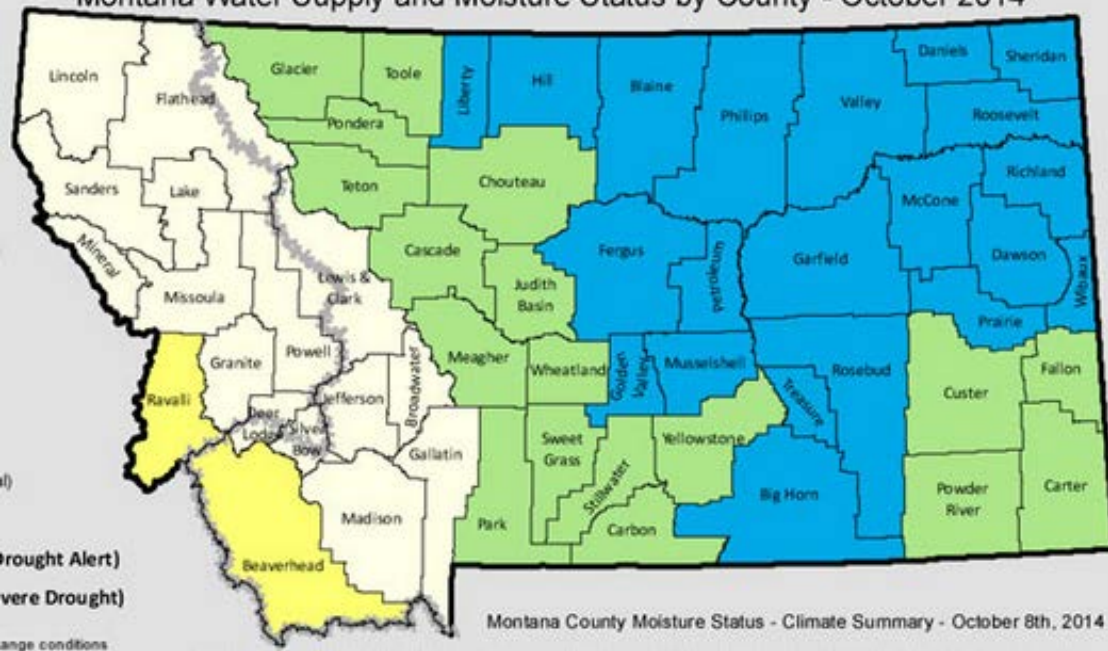
Wetter

No Change

Silver Bow	Rosebud (3)	Garfield (2)	Ravalli	Lincoln
Beaverhead	Custer (2)	Phillips		Flathead
Madison (2)	Powder River	Petroleum (2)		Sanders
Gallatin	Carter	Blaine		Lake
Park (2)	Fallon (2)	Fergus (2)		Mineral
Wheatland (2)	Prairie (3)	Hill		Missoula
Sweet Grass (2)	Wibaux (2)	Liberty		Granite
Golden Valley (3)	Dawson (2)	Chouteau		Powell
Stillwater (2)	McCone (2)	Cascade		Deer Lodge
Carbon (2)	Richland (2)	Teton		Jefferson
Musselshell (3)	Roosevelt (2)	Pondera		Broadwater
Yellowstone (2)	Sheridan (2)	Toole		Lewis and Clark
Big Horn (3)	Daniels	Glacier		Meagher
Treasure (3)	Valley			Judith Basin



Montana Drought Status October 2014 vs. April 2015



Montana Drought & Water Supply Advisory Committee

April 16, 2015

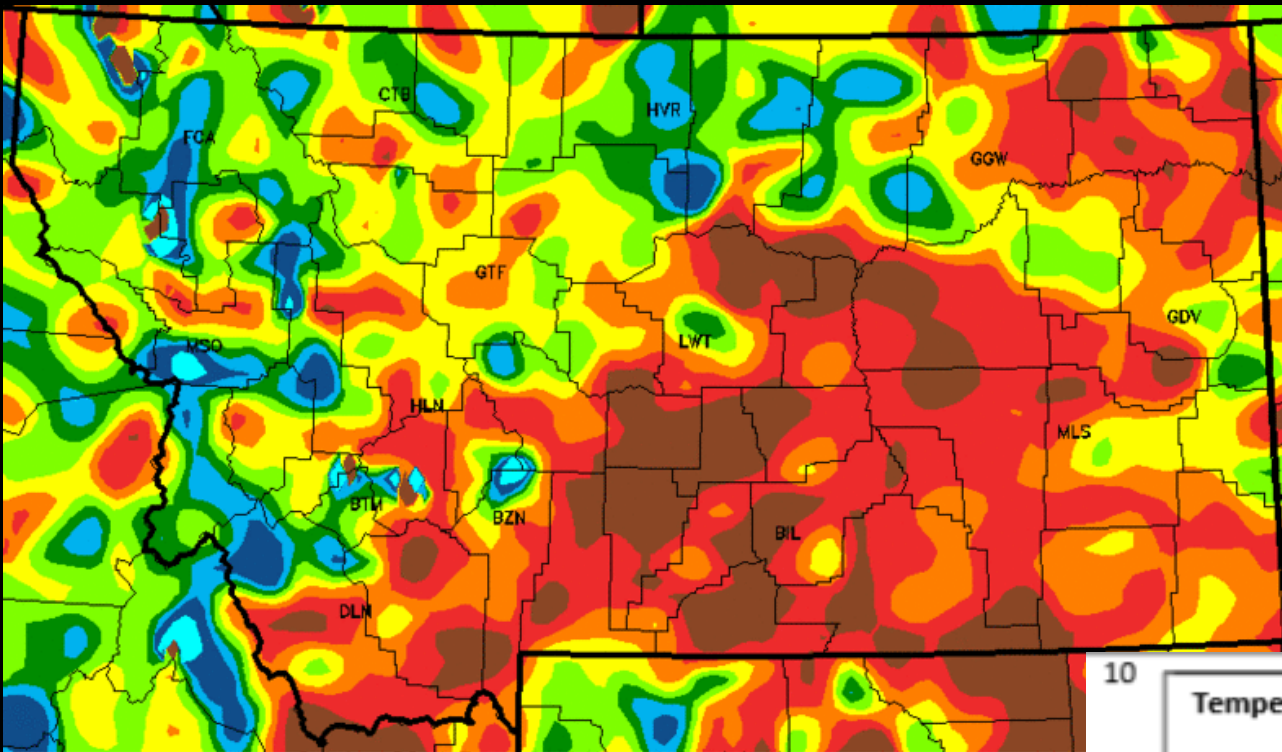
National Weather Service

Gina Loss – Service Hydrologist



Percent of Normal Precipitation

October 2014



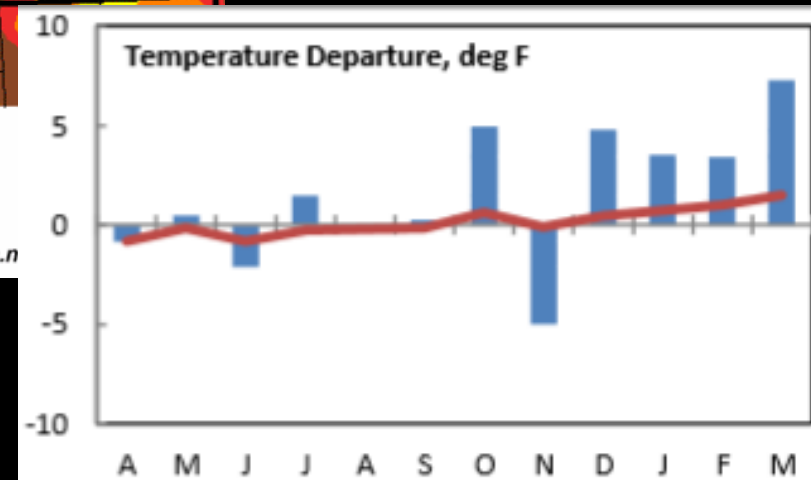
October 2014 Percent of Normal Precipitation

Period of Normal: 1981–2010

20 40 60 85 115 150 200 400

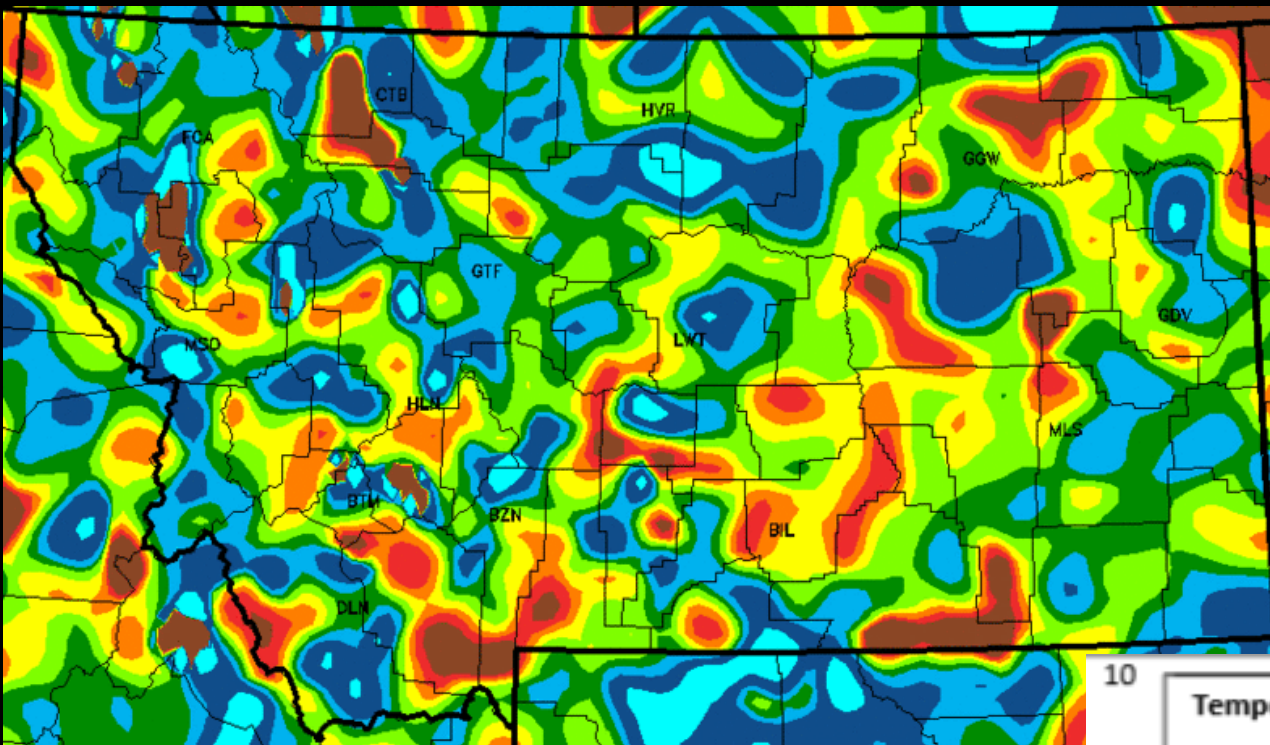
NOTE: Data used to generate this image are
PROVISIONAL AND SUBJECT TO CHANGE.

<http://www.wrh.n>



Percent of Normal Precipitation

November 2014

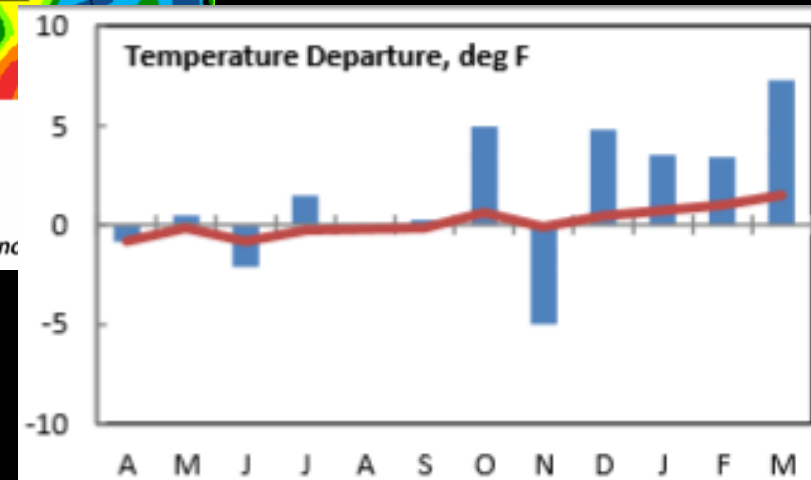


November 2014 Percent of Normal Precipitation
Period of Normal: 1981–2010

20 40 60 85 115 150 200 400

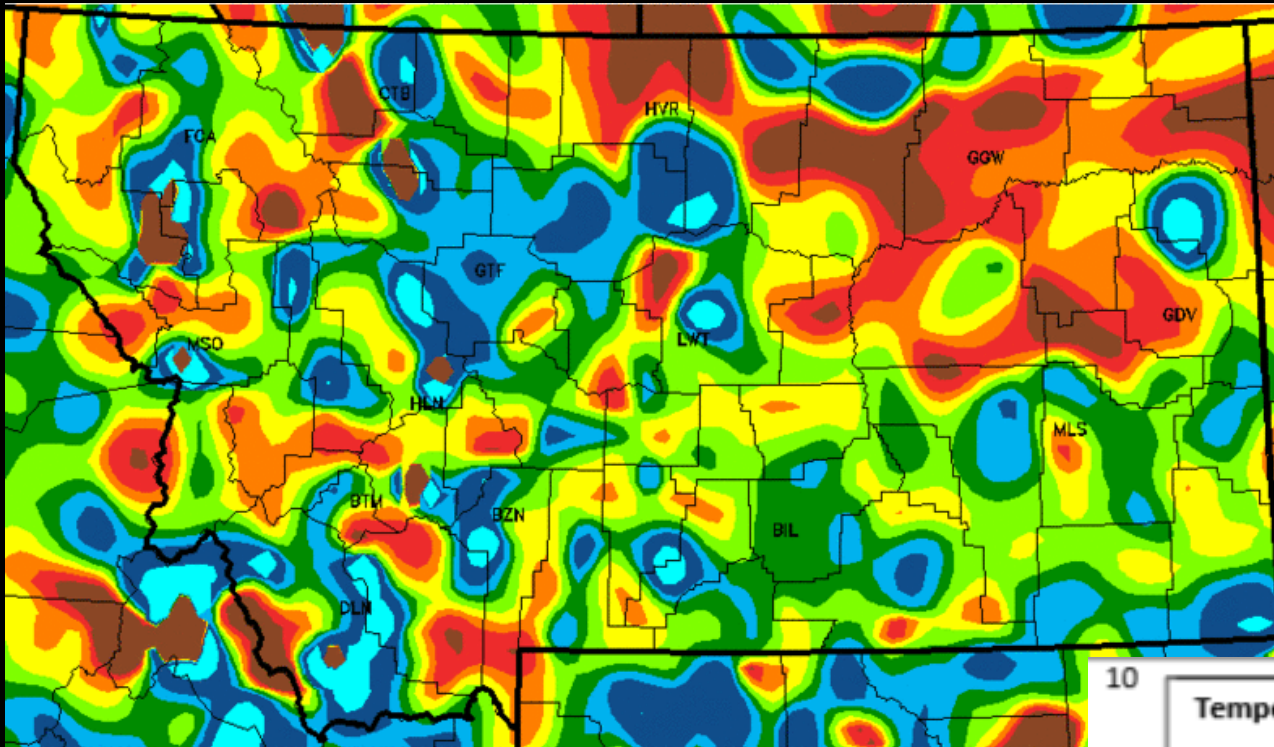
NOTE: Data used to generate this image are
PROVISIONAL AND SUBJECT TO CHANGE.

<http://www.wrh.noaa.gov>



Percent of Normal Precipitation

December 2014

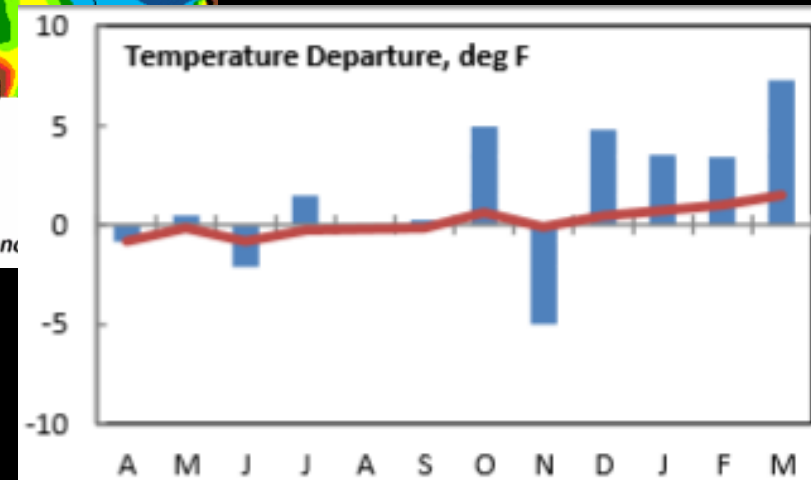


December 14 Percent of Normal Precipitation
Period of Normal: 1981–2010

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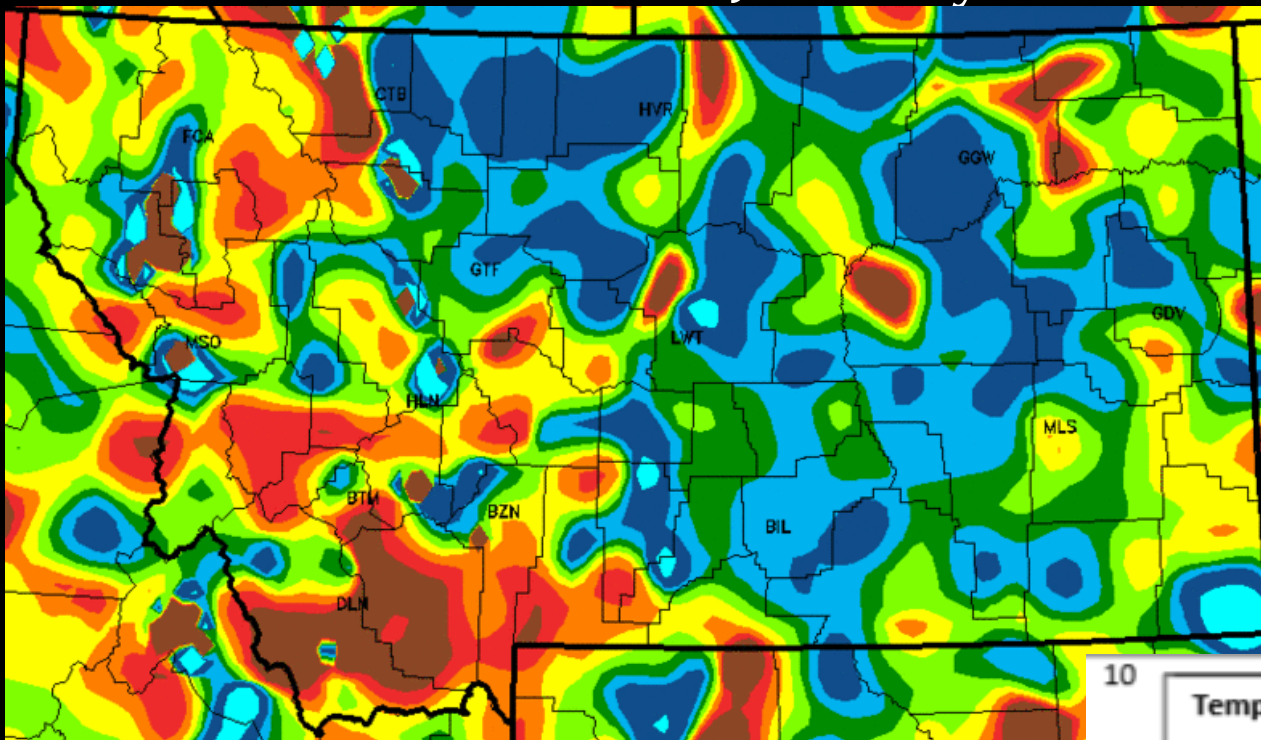
NOTE: Data used to generate this image are
PROVISIONAL AND SUBJECT TO CHANGE.

<http://www.wrh.noaa.gov>



Percent of Normal Precipitation

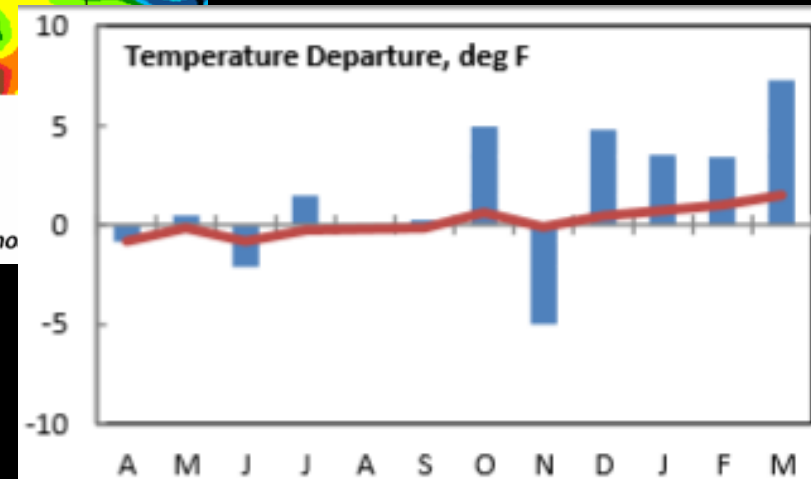
January 2015



20 40 60 85 115 150 200 400

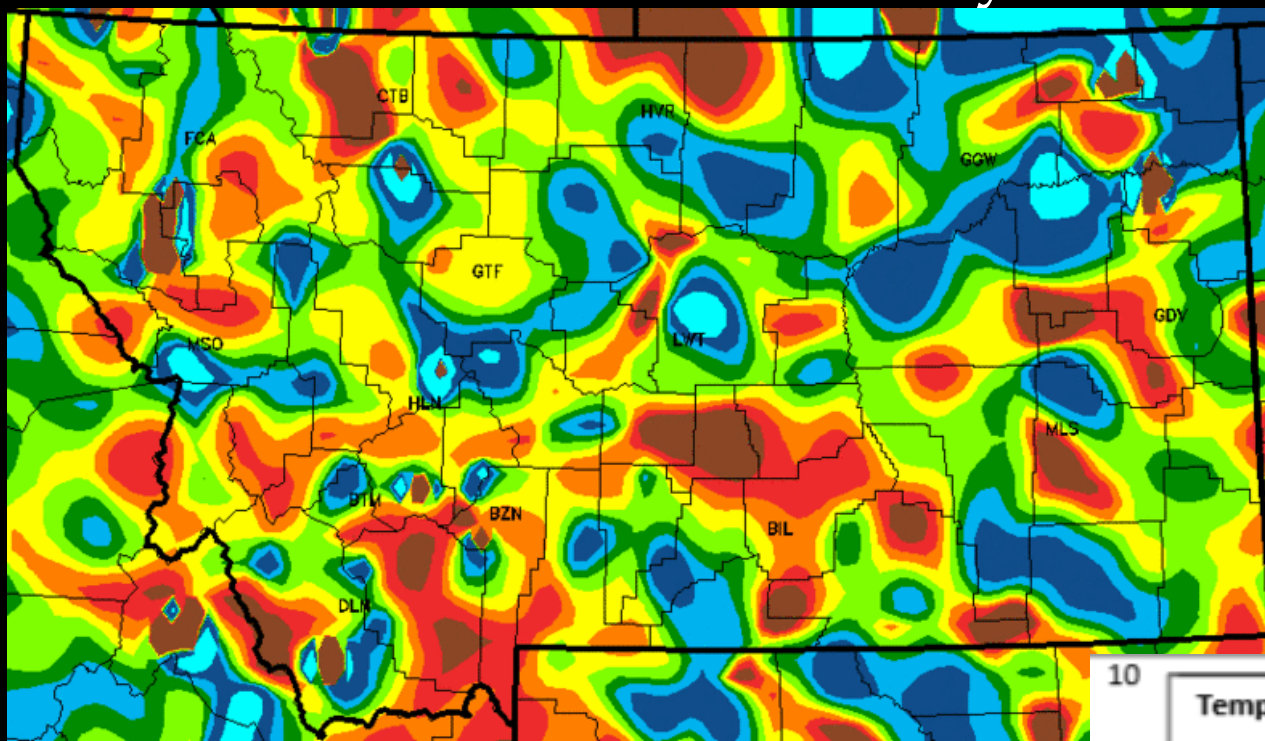
NOTE: Data used to generate this image are
PROVISIONAL AND SUBJECT TO CHANGE.

<http://www.wrh.no>



Percent of Normal Precipitation

February 2015

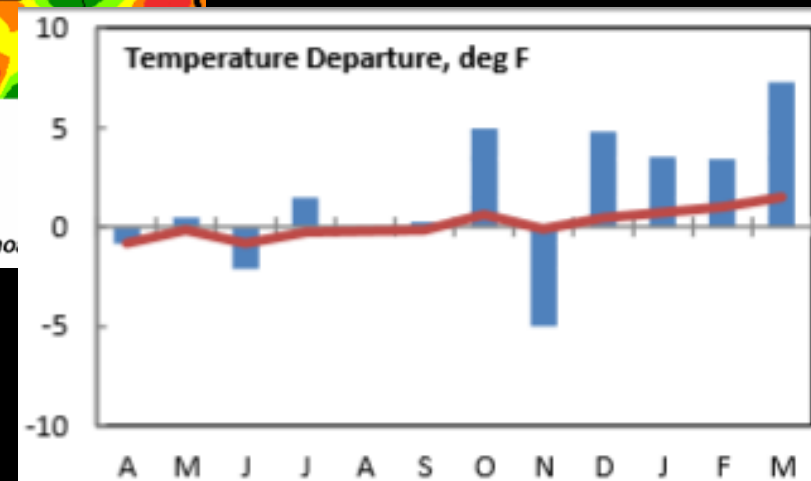


February 2015 Percent of Normal Precipitation
Period of Normal: 1981–2010

20 40 60 85 115 150 200 400

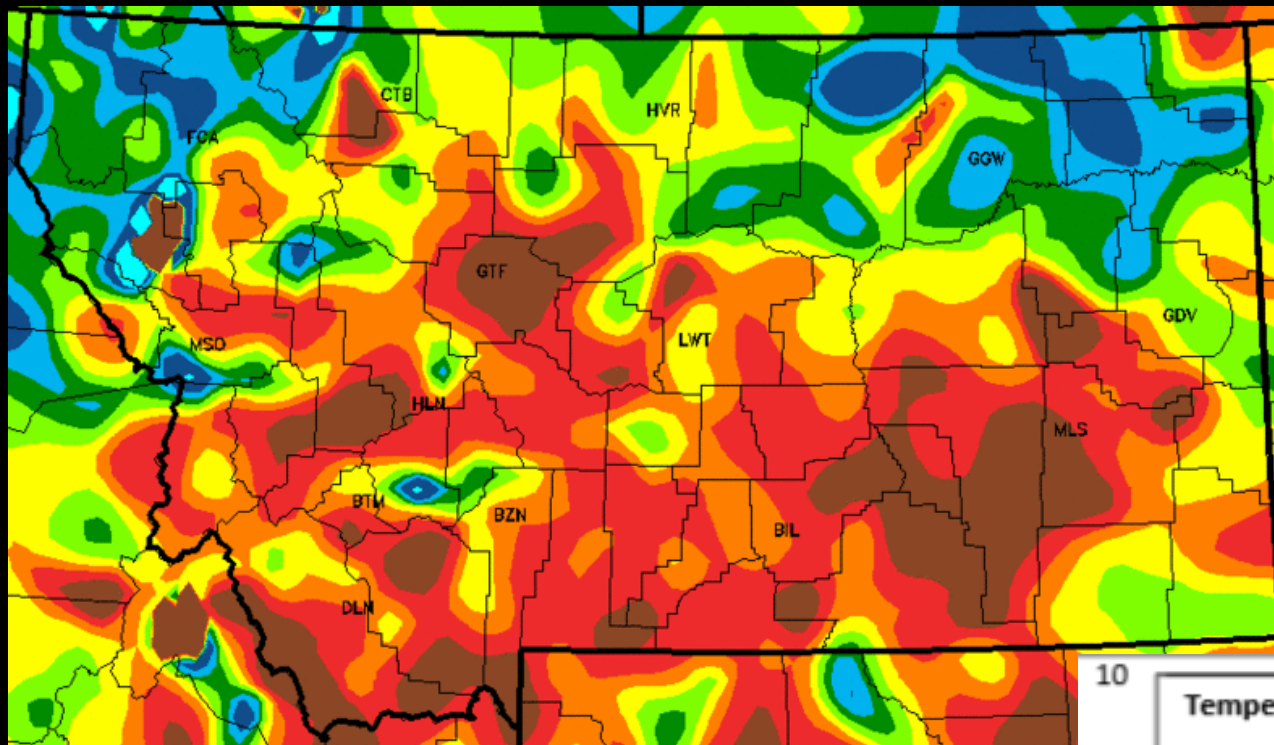
NOTE: Data used to generate this image are
PROVISIONAL AND SUBJECT TO CHANGE.

<http://www.wrh.no>



Percent of Normal Precipitation

March 2015



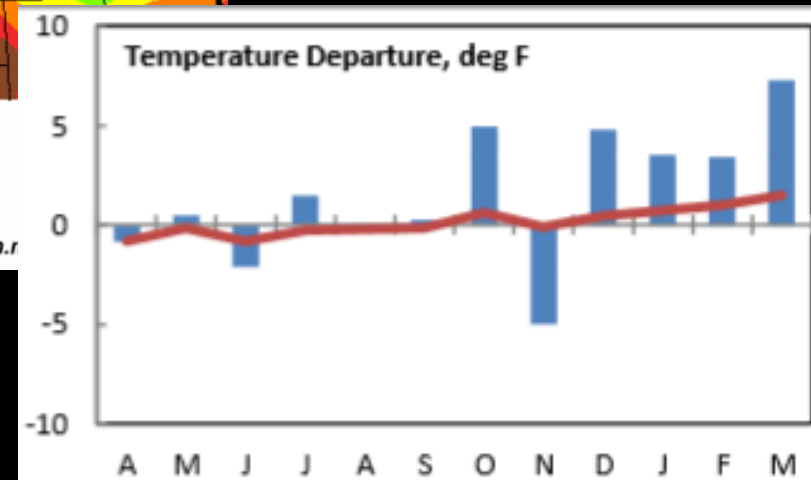
March 2015 Percent of Normal Precipitation
Period of Normal: 1981–2010

20 40 60 85 115 150 200 400

NOTE: Data used to generate this image are
PROVISIONAL AND SUBJECT TO CHANGE.

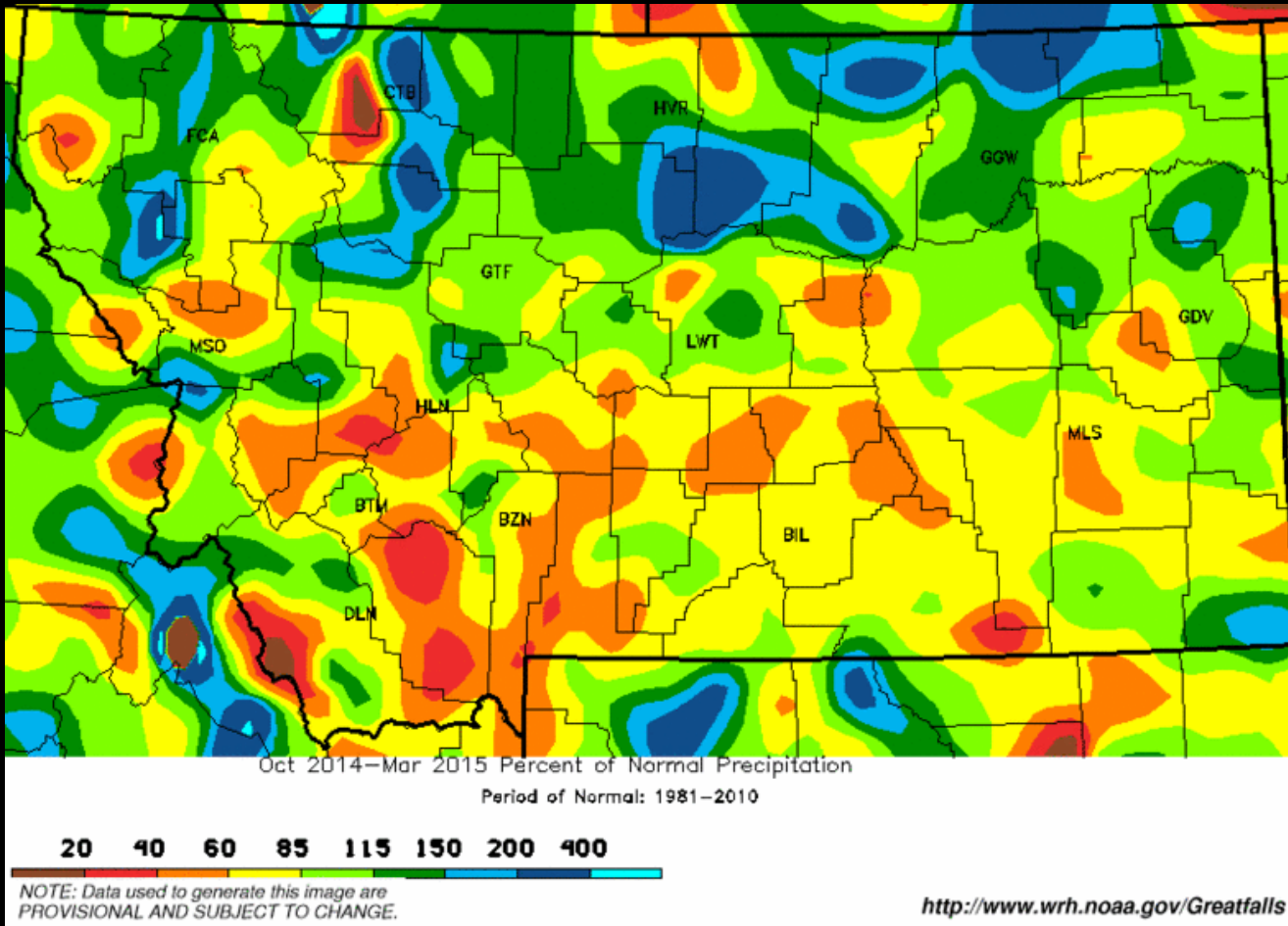
<http://www.wrh.r>

- Second warmest on record
 - +7.3 °F
 - 36 new record high temperatures set around the state



Percent of Normal Precipitation Water Year 2015

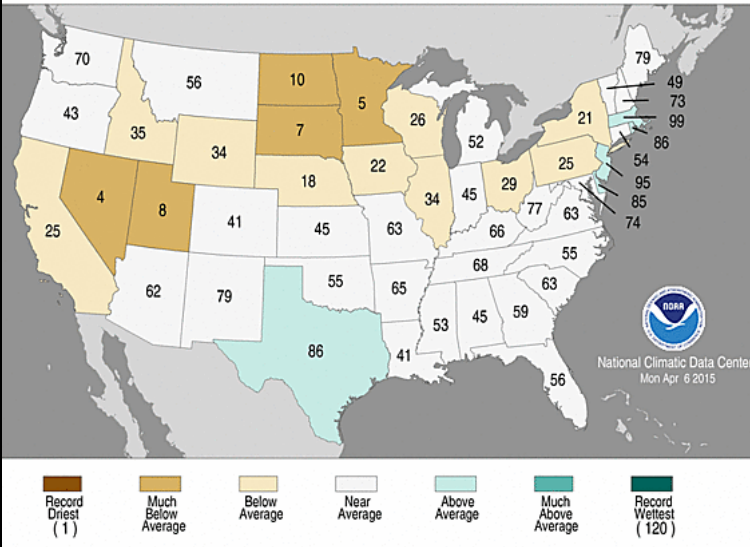
- October - March
- Southern half mostly below to well below normal
- Northern half above to well above normal



Statewide Precipitation Ranks

October 2014–March 2015

Period: 1895–2015



Water Year Rankings

56th driest, 65th wettest

5th warmest

Temperatures

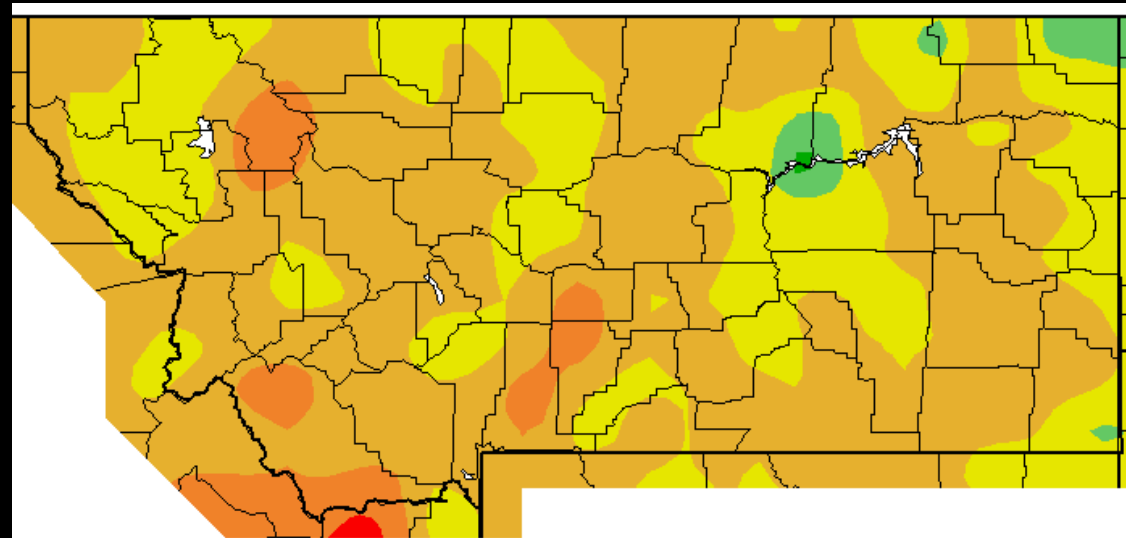
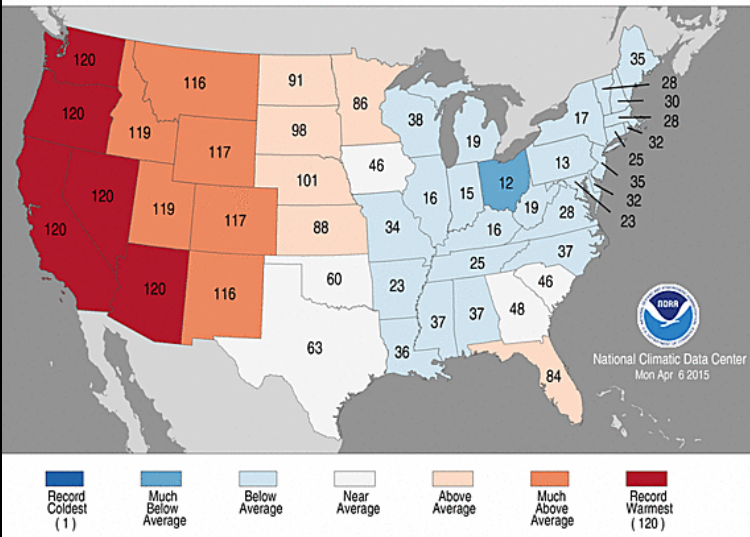
Near to 4 °F above normal

Isolated areas 4–6 °F above normal

Statewide Average Temperature Ranks

October 2014–March 2015

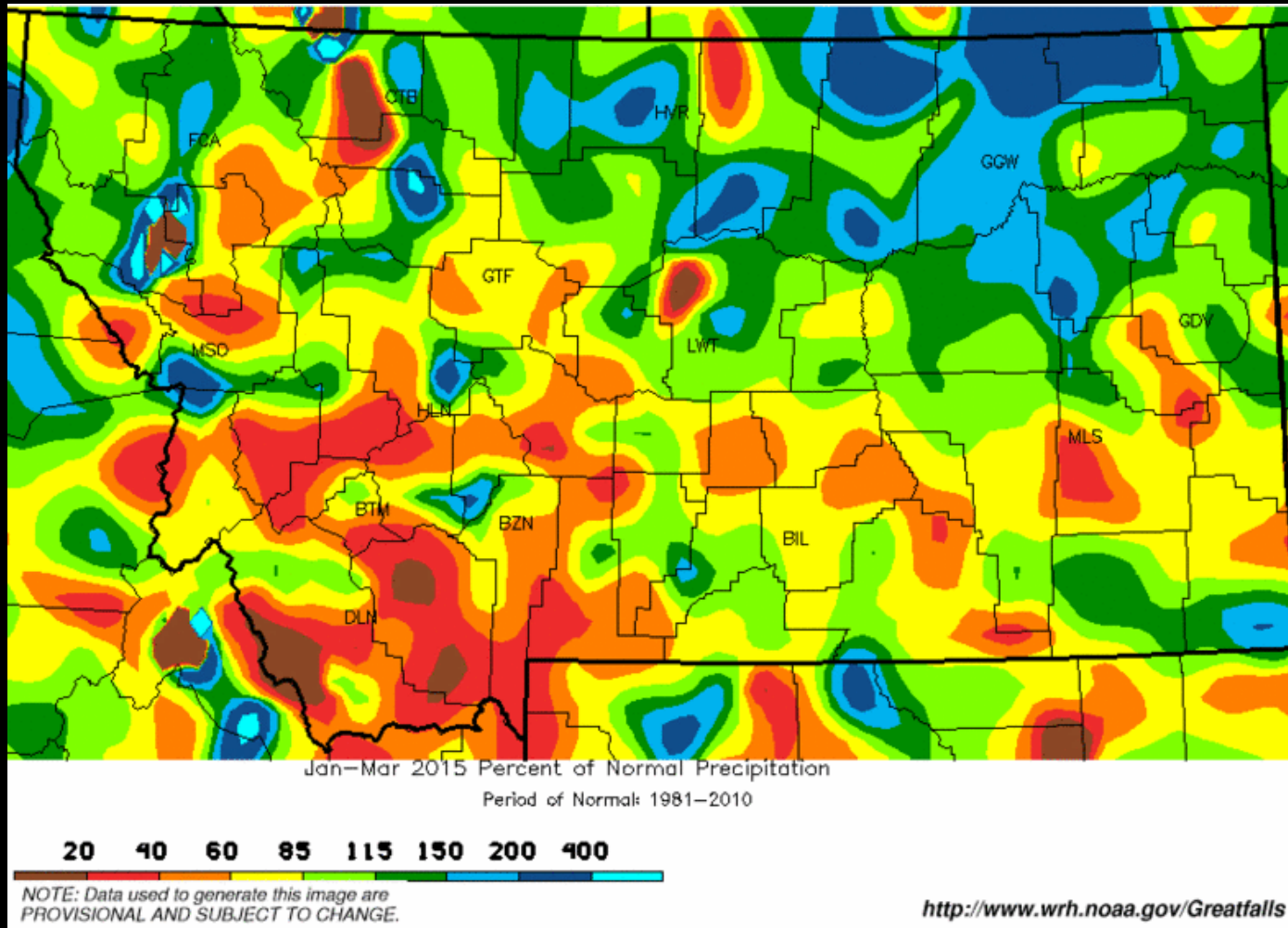
Period: 1895–2015



Departure from average temperature



Percent of Normal Precipitation Calendar Year

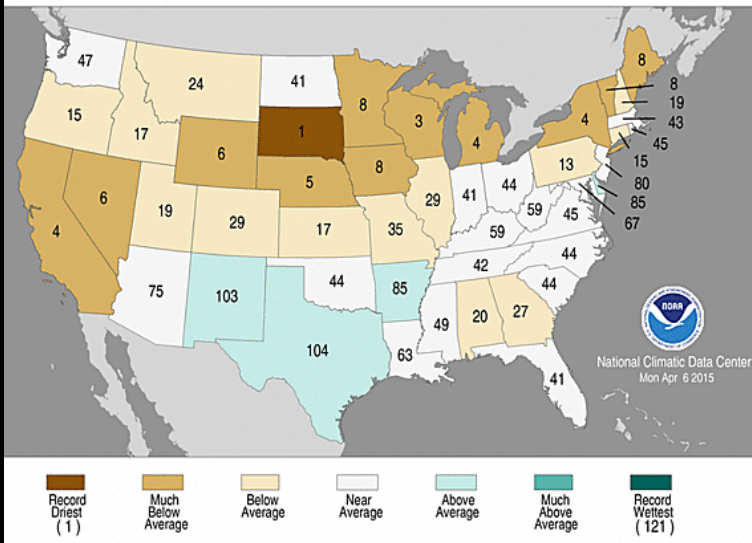


- January - March
- Below to well below normal southwest
- Above to well above normal north-central and northeast
- Mixed conditions west and south-central

Statewide Precipitation Ranks

January–March 2015

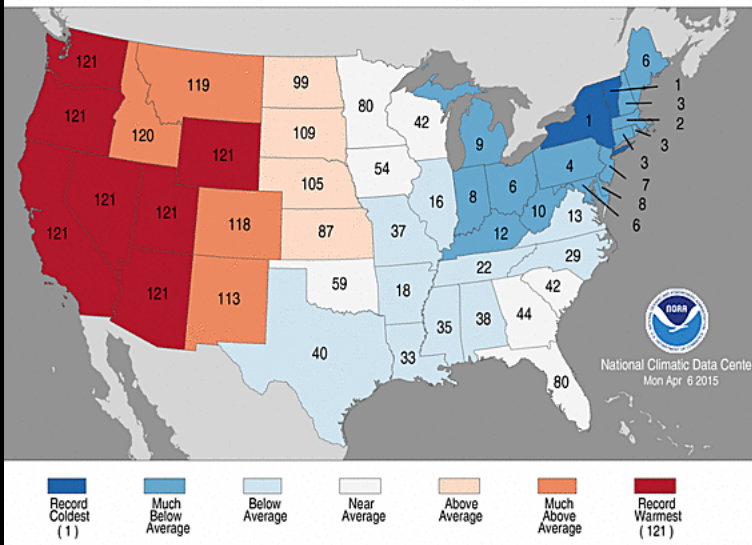
Period: 1895–2015



Statewide Average Temperature Ranks

January–March 2015

Period: 1895–2015



Calendar Year Rankings

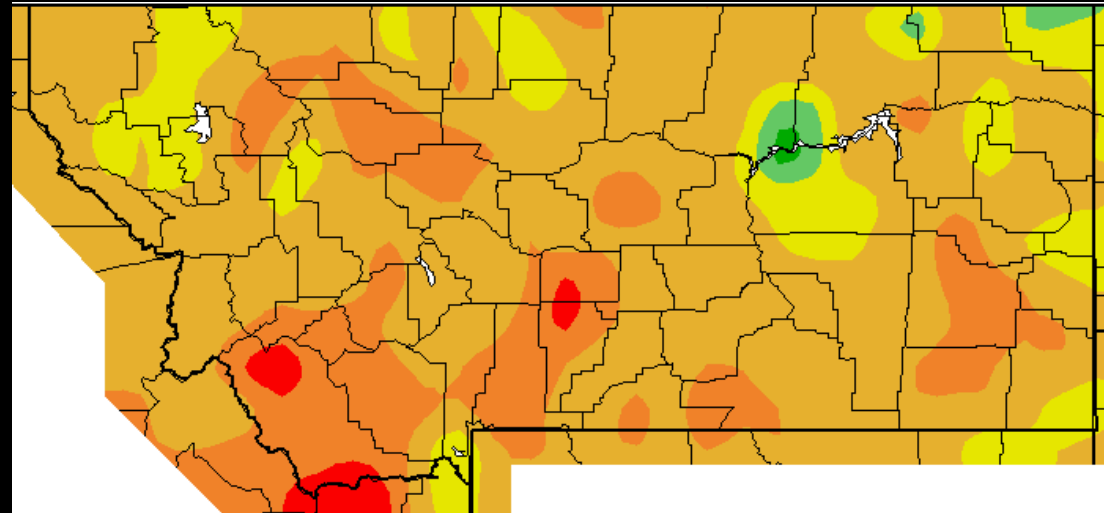
24th driest

2nd warmest

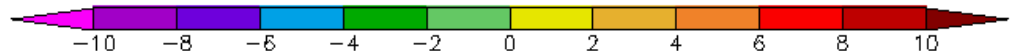
Temperatures

Mostly 2 to 6 °F above normal

Isolated areas 6 to 8 °F above normal

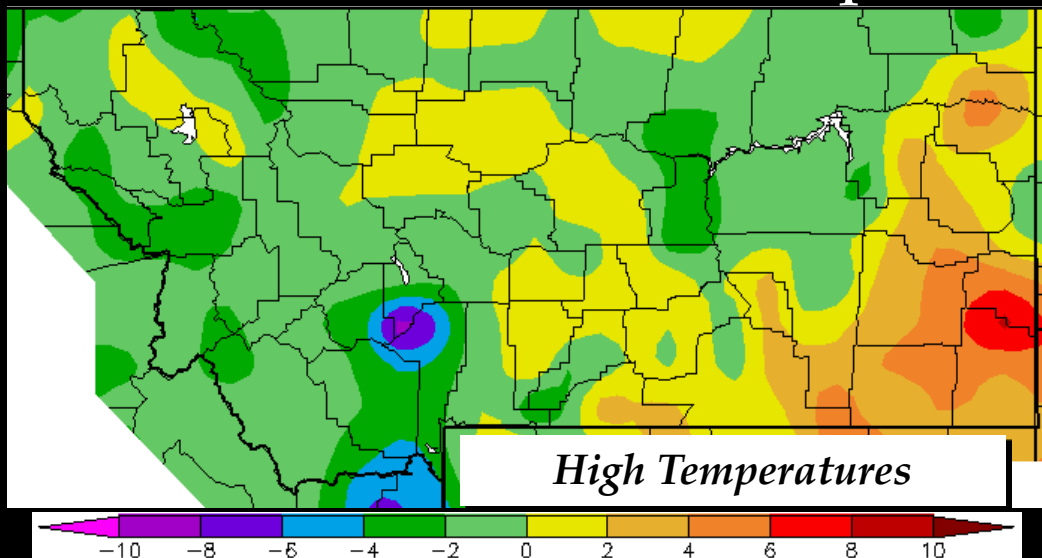


Departure from average temperature

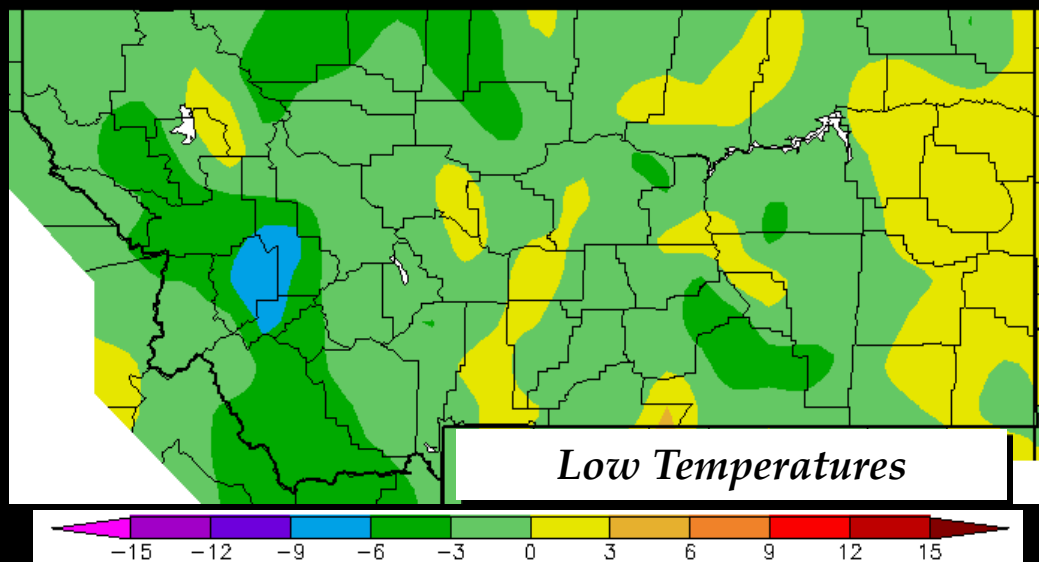


Temperature Anomalies

April 1-14

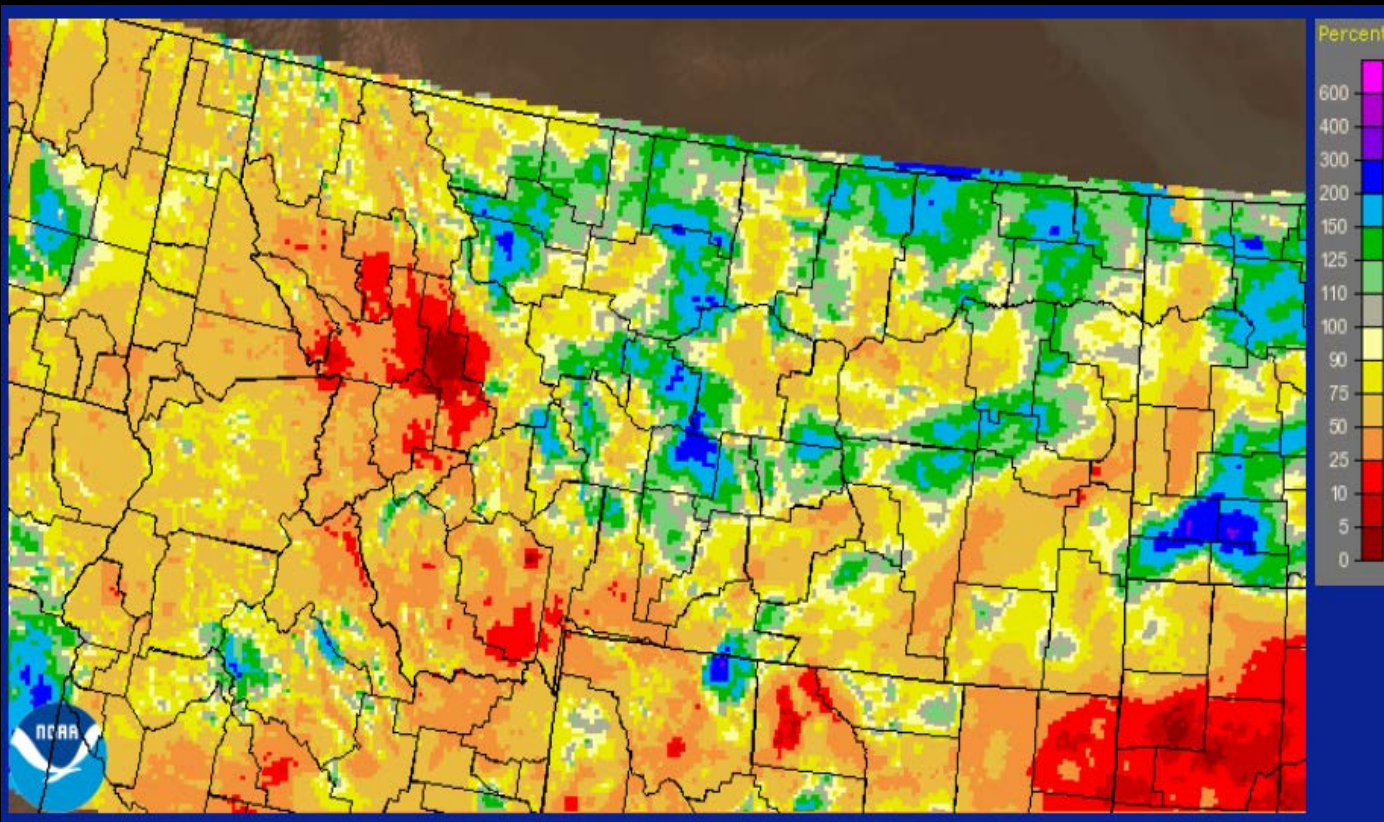


- Highs
 - Mostly near normal
 - Isolated areas 2-8 °F colder than normal west
 - Isolated areas 2-8 °F warmer than normal east



- Lows
 - Mostly near normal
 - Areas 3-6 °F below normal north-central, west, southwest, south-central

Percent of Average Precipitation April 1-14

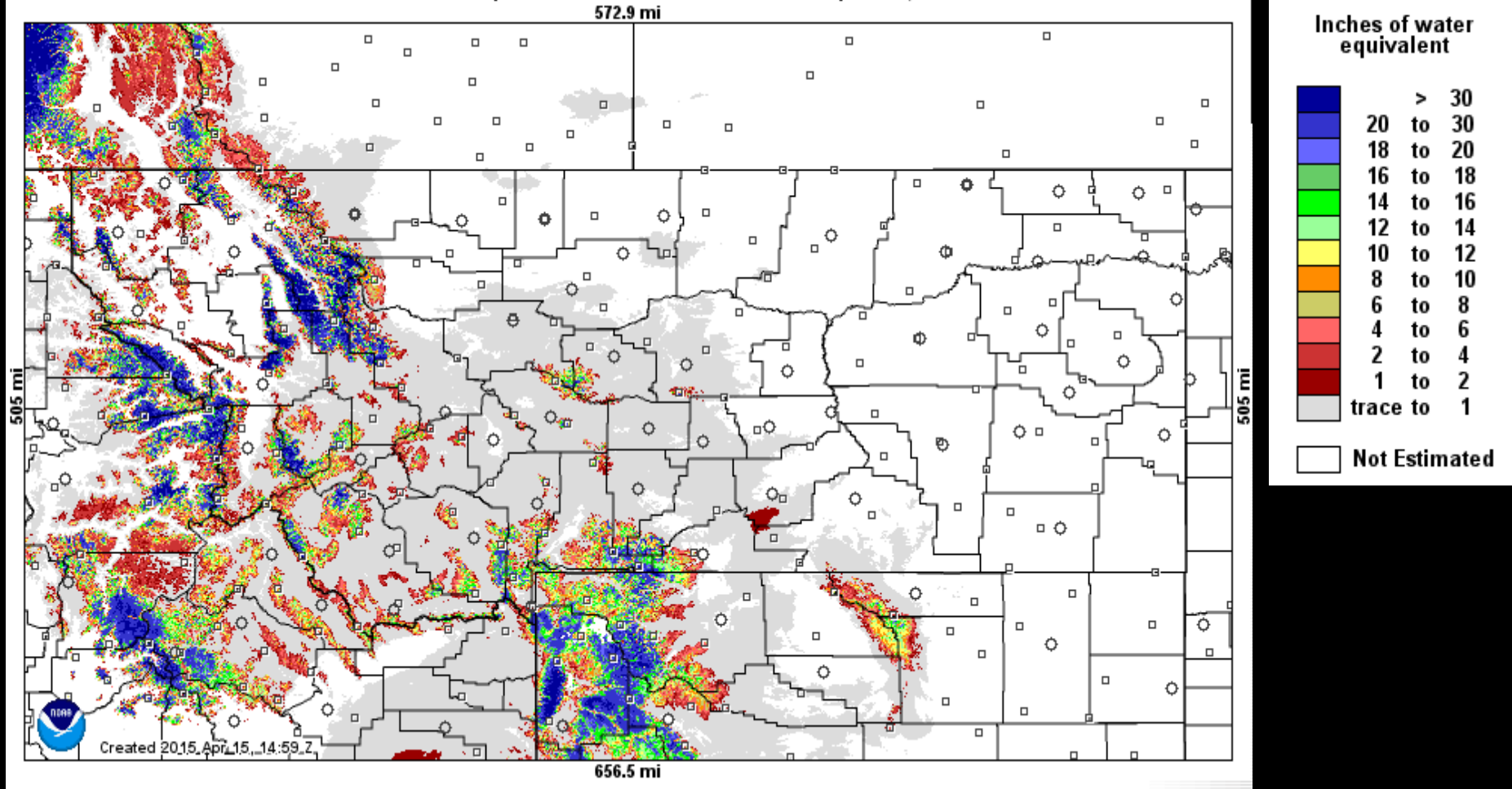


- Below to well below normal west, southwest, central, southeast
- Above to well above normal north-central to northeast

NOHRSC Modeled Snow Water Equivalent

April 15, 2014

Modeled Snow Water Equivalent forecasted for 2015 April 15, 18:00 UTC

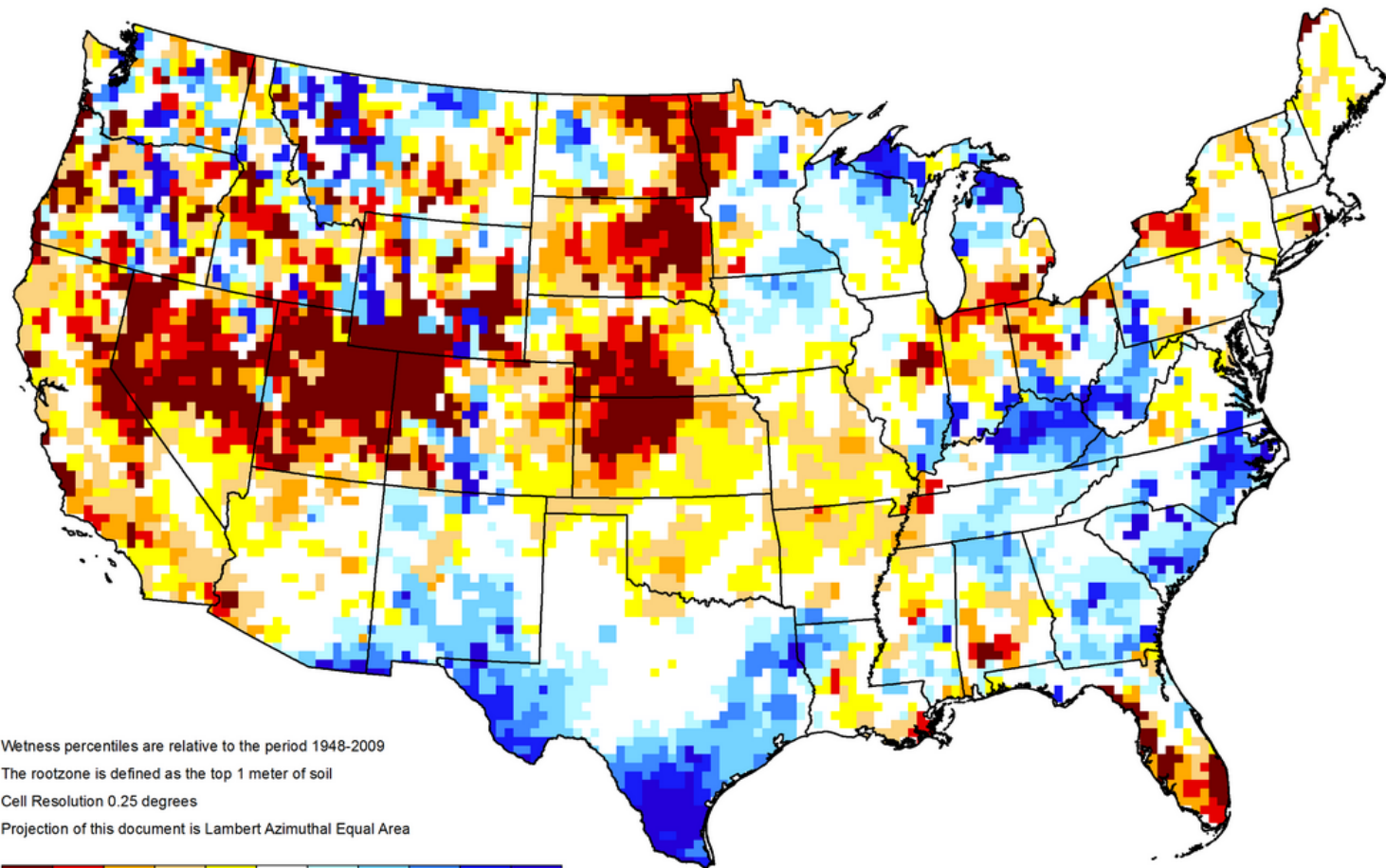


Soil Moisture – Upper 1 Meter



GRACE-Based Root Zone Soil Moisture Drought Indicator

April 13, 2015

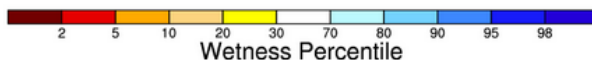


Wetness percentiles are relative to the period 1948-2009

The rootzone is defined as the top 1 meter of soil

Cell Resolution 0.25 degrees

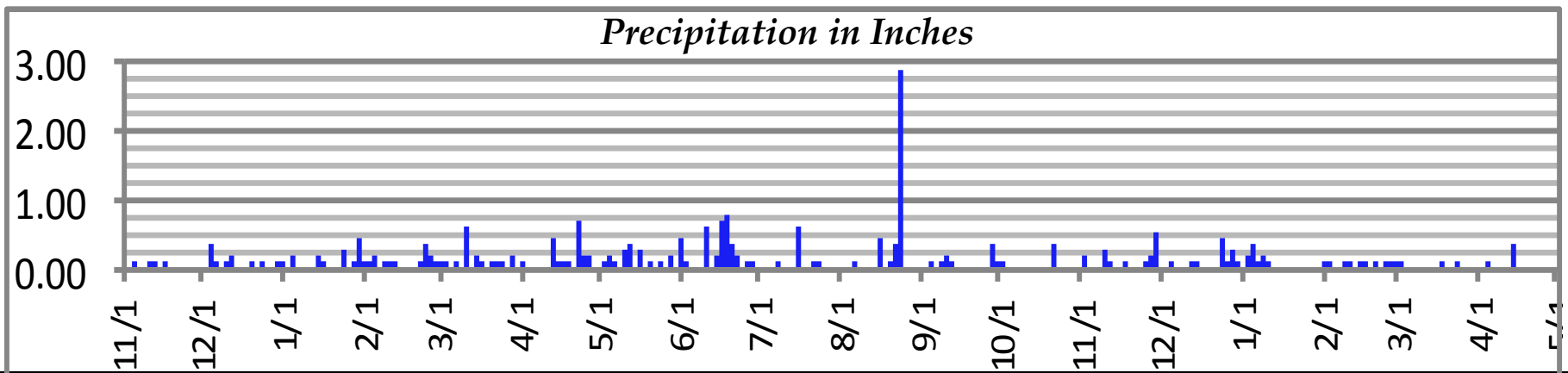
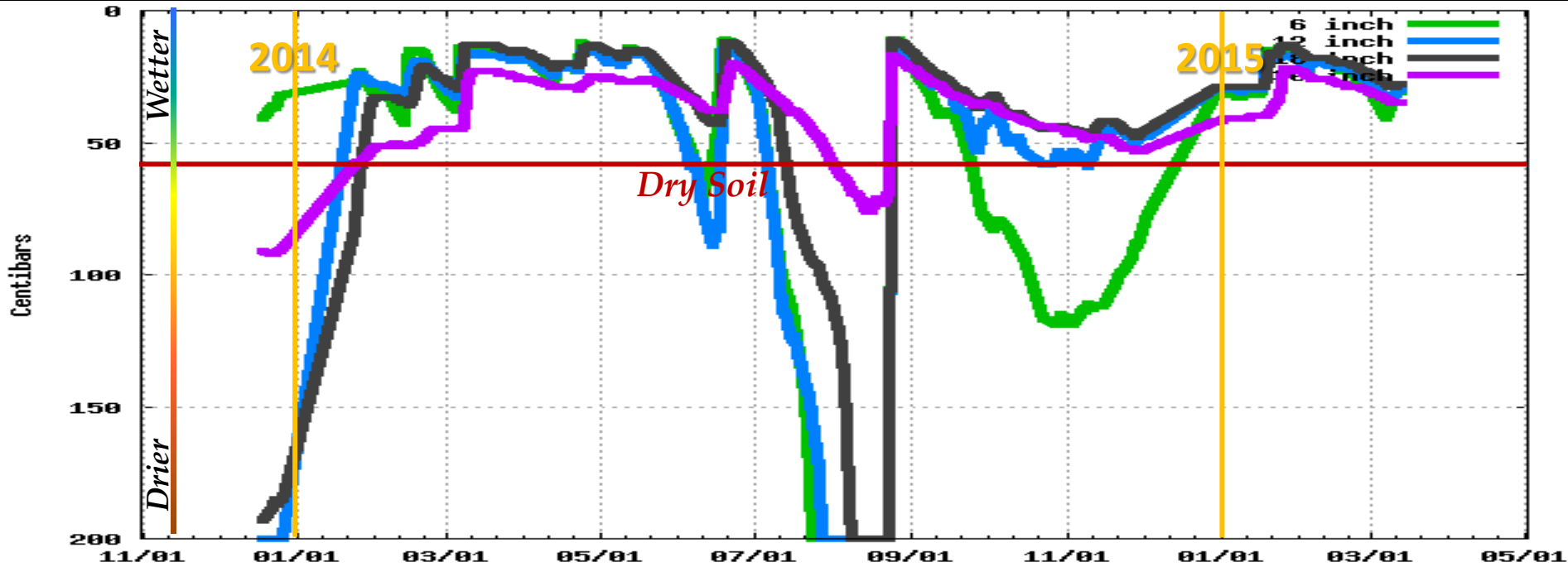
Projection of this document is Lambert Azimuthal Equal Area



<http://drought.unl.edu/MonitoringTools/NASAGRACEDataAssimilation.aspx>



Great Falls Soil Moisture

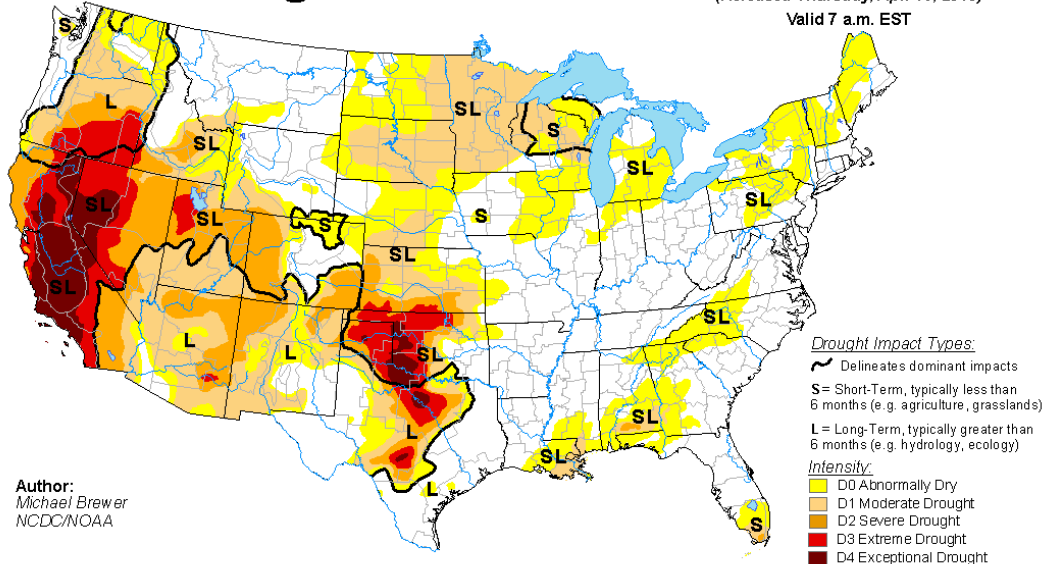


National Drought Monitor

Issued April 16

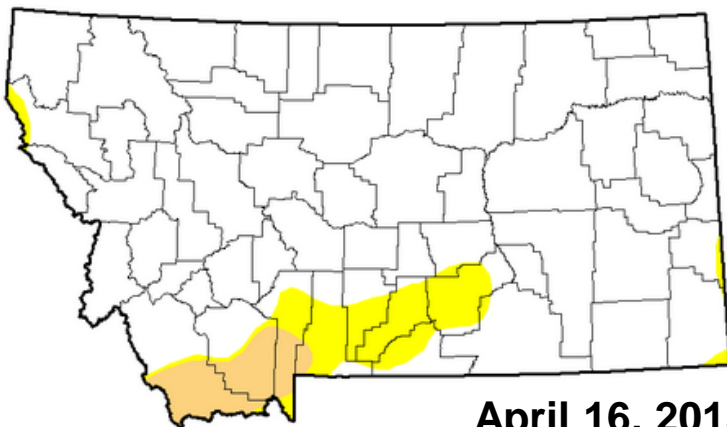
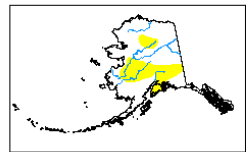
U.S. Drought Monitor

April 14, 2015
(Released Thursday, Apr. 16, 2015)
Valid 7 a.m. EST

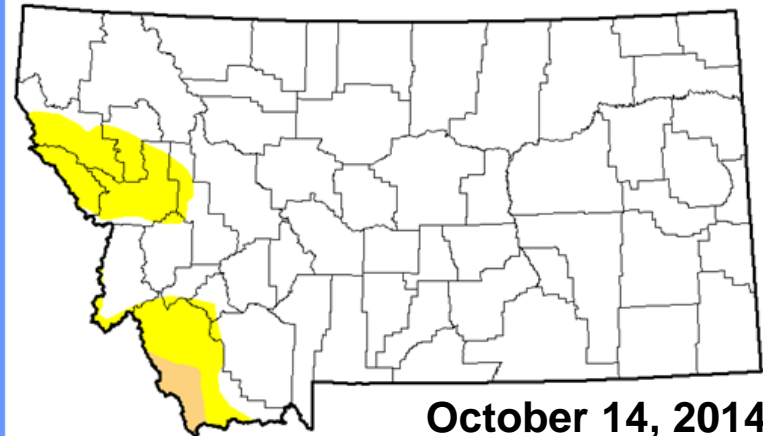


Author:
Michael Brewer
NCDC/NOAA

- 'Abnormally Dry' southwest into south-central Montana
- Introduction of D1 'Moderate Drought' into southwest Montana



April 16, 2015

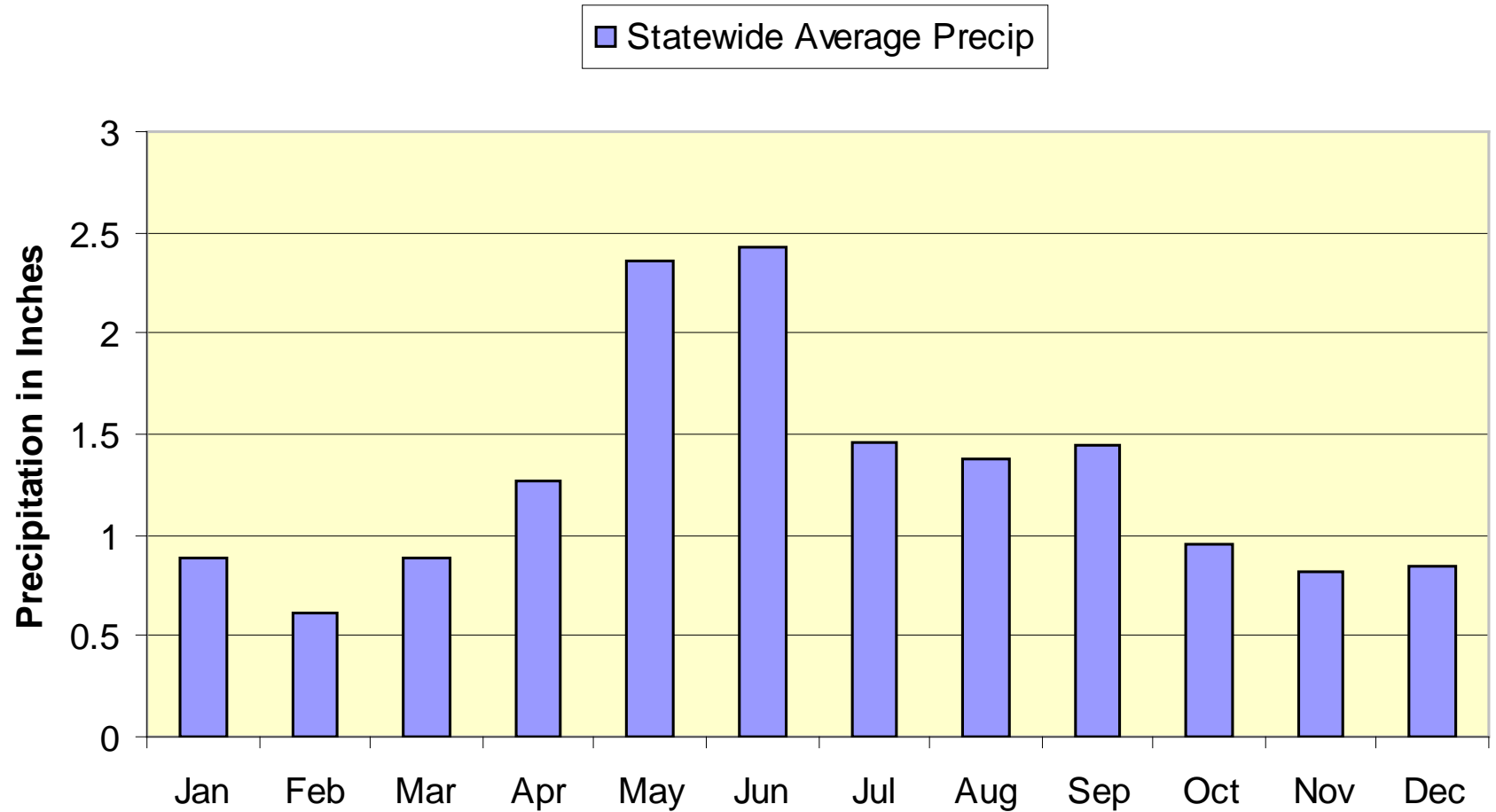


October 14, 2014



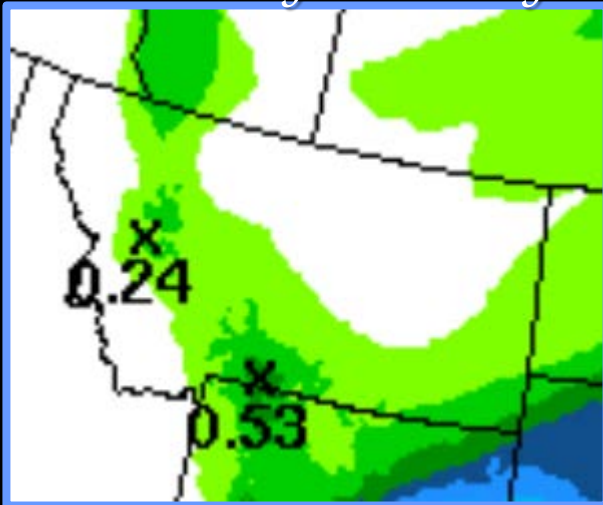
Statewide Average Precipitation

April starts upswing in spring precipitation

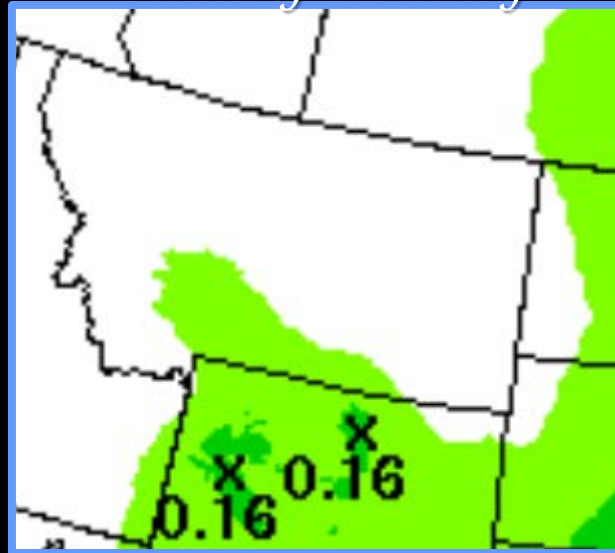


7-Day Precipitation Forecast

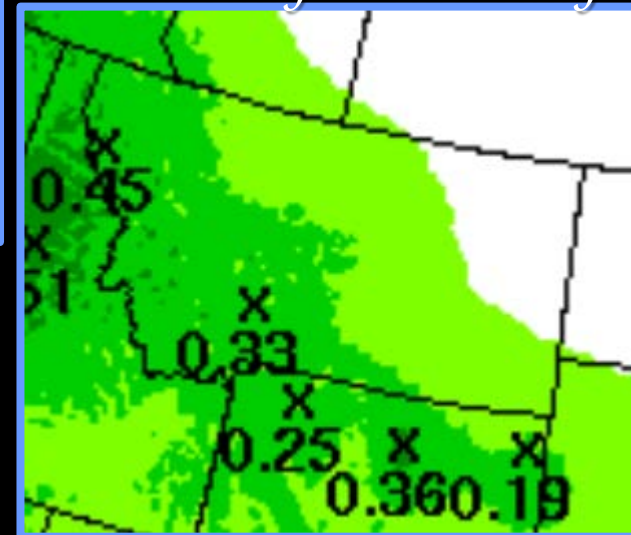
Thursday-Saturday



Sunday-Monday



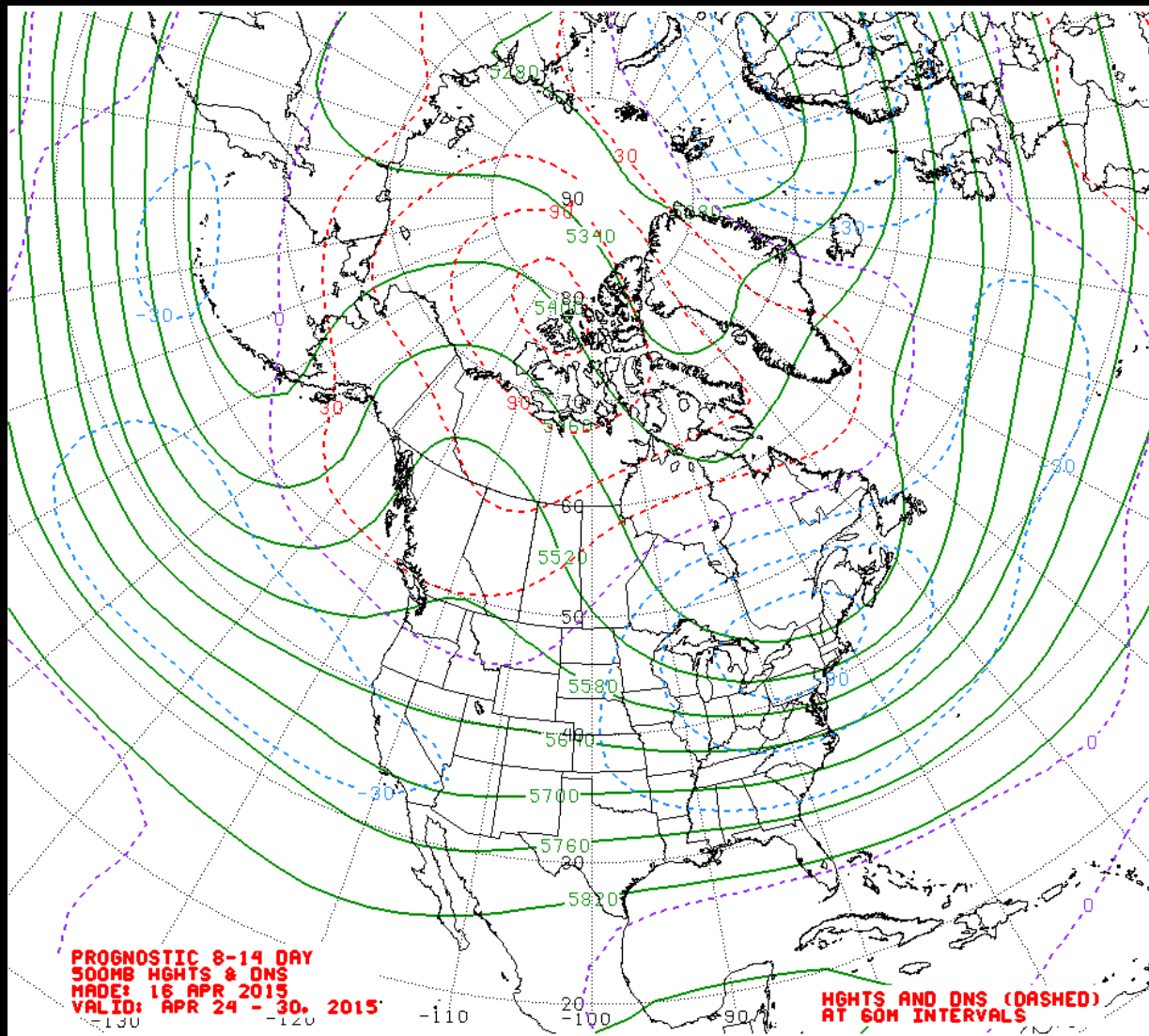
Tuesday-Wednesday



8 to 14 Day Outlook

500mb Heights and Anomalies

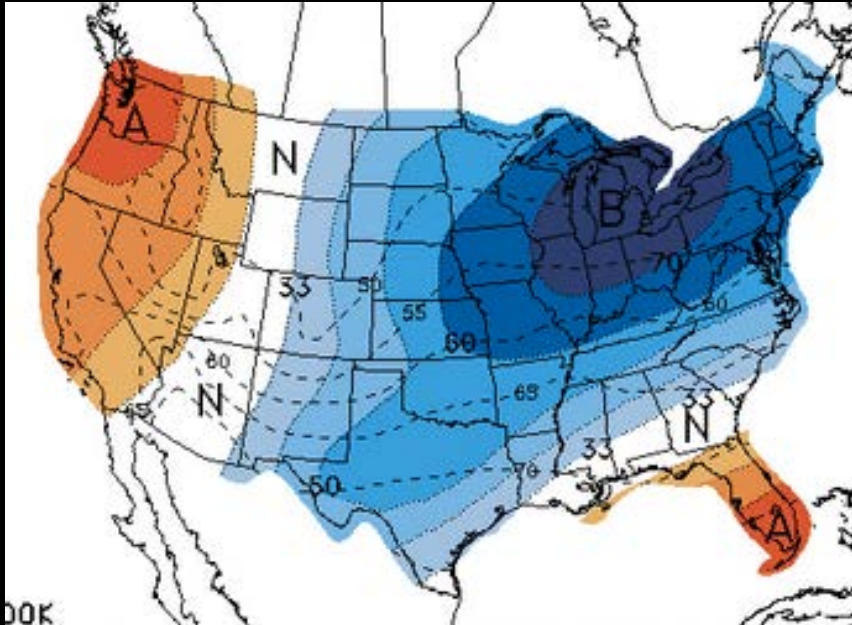
- April 23 - 29
- Split in flow coming into Pacific Northwest and Montana



8 to 14 Day Outlook

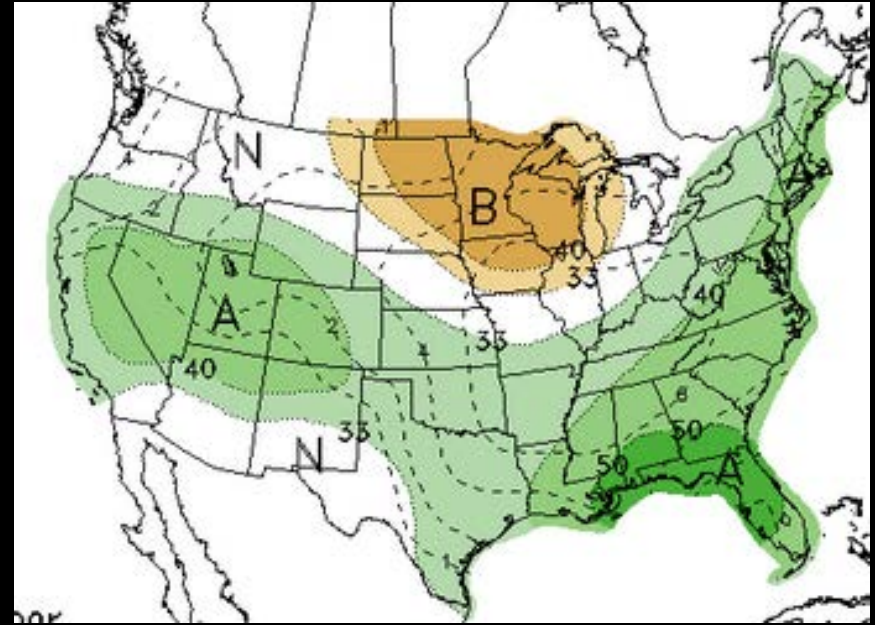
April 23 - 29

Temperature



- 33% to 40% chance temperatures will be above normal west
- 33% to 40% chance temperatures will be below normal east
- Equal chances for above, below or near normal central

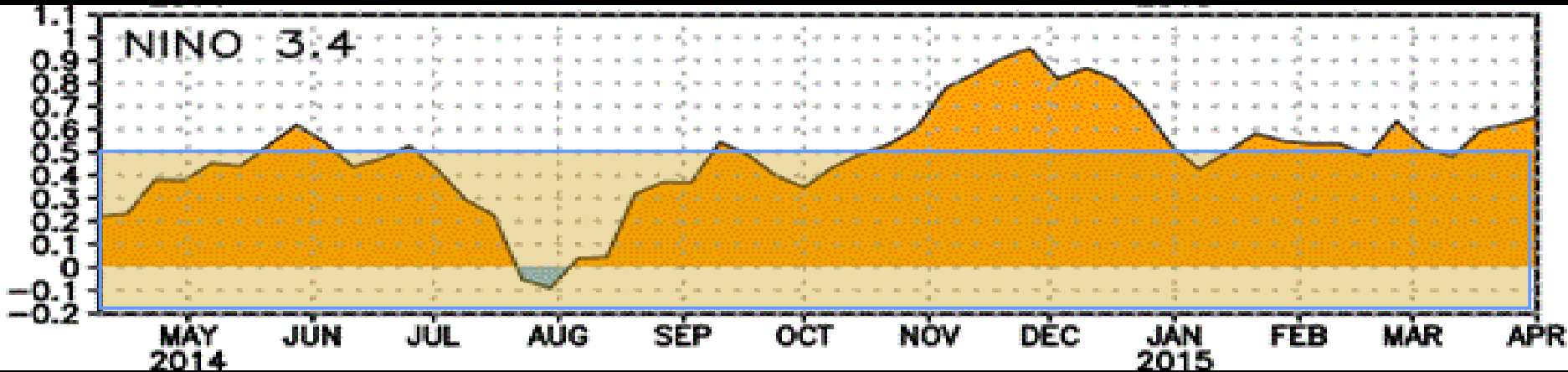
Precipitation



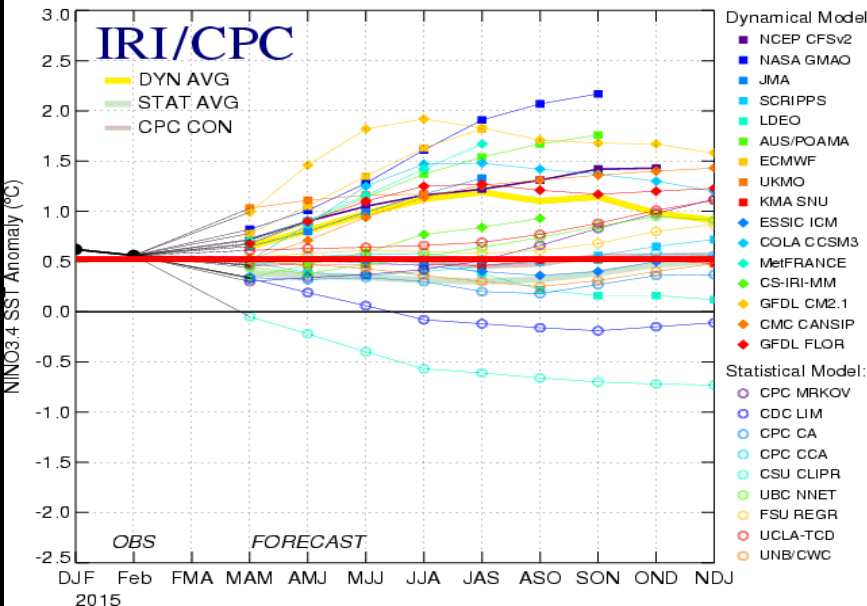
- Equal chances precipitation will be above, below, or near normal all but extreme northeast Montana
- 33-40% chance precipitation will be below normal extreme northeast

El Niño / La Niña

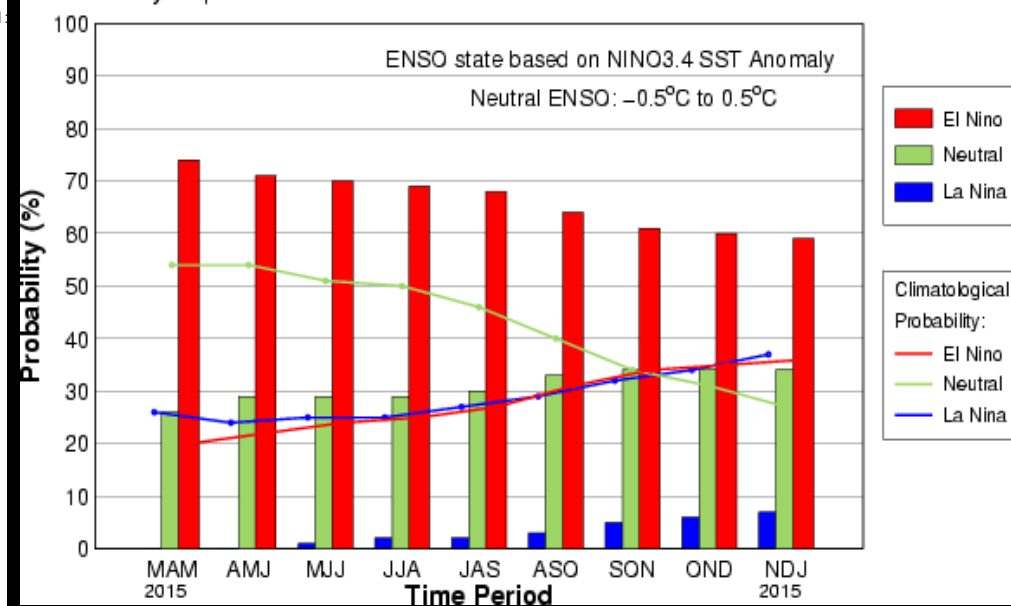
El Niño Advisory - Likely El Niño will continue through summer and autumn



Mid-Mar 2015 Plume of Model ENSO Predictions



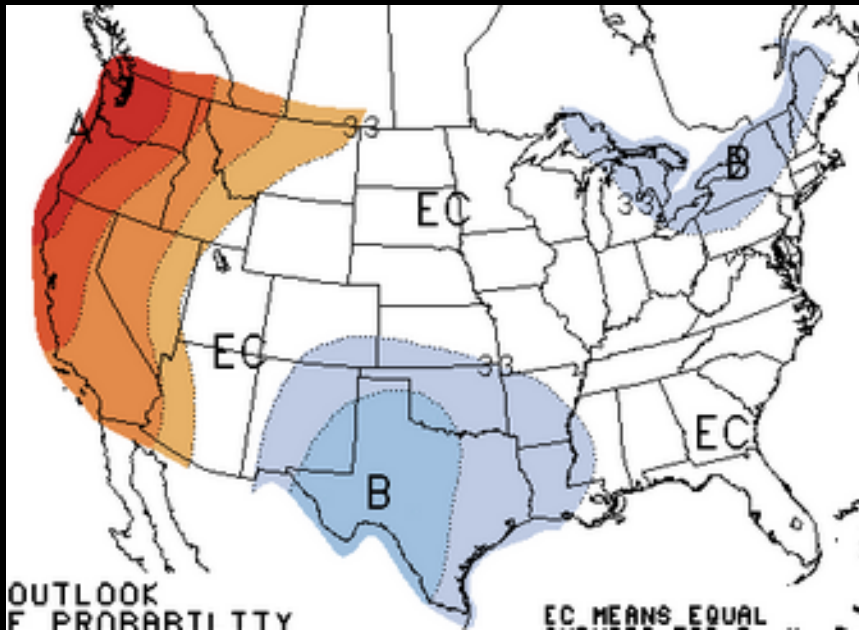
Early-Apr CPC/IRI Consensus Probabilistic ENSO Forecast



May Outlook

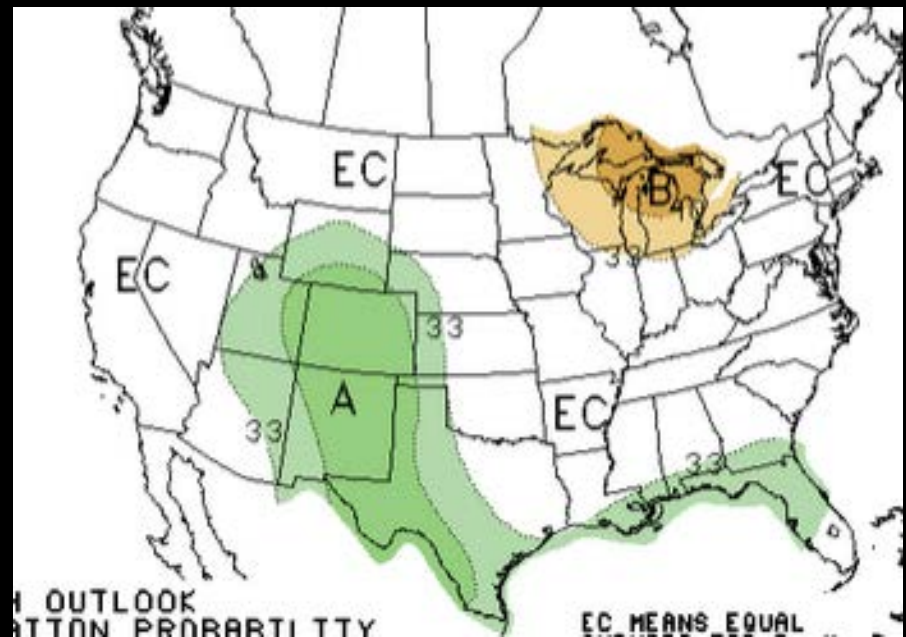
Updated April 16

Temperature



- 33% to 50% chance temperatures will be above normal over west, central, and northeast Montana

Precipitation

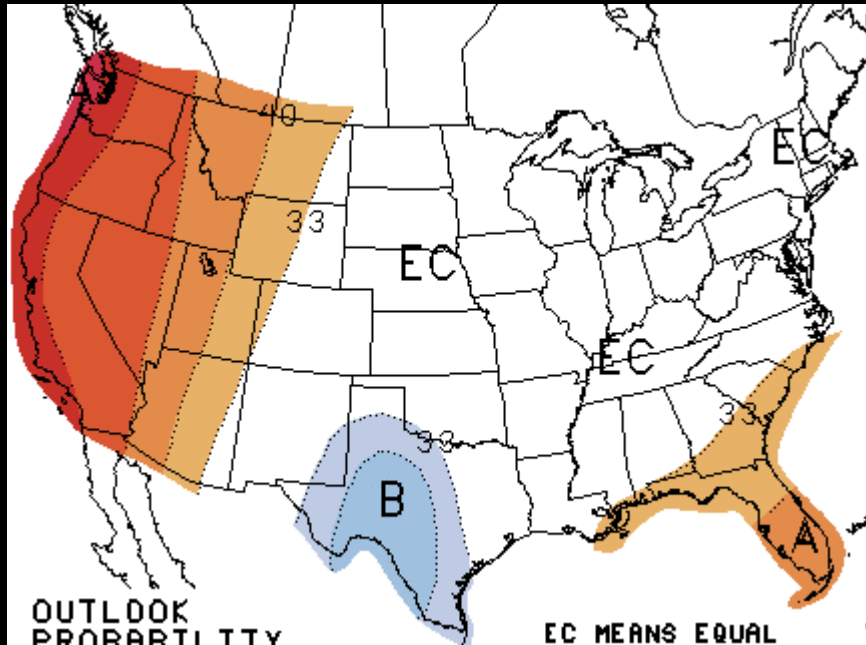


- Equal chances precipitation will be above, below, or near normal across Montana

June – August Outlook

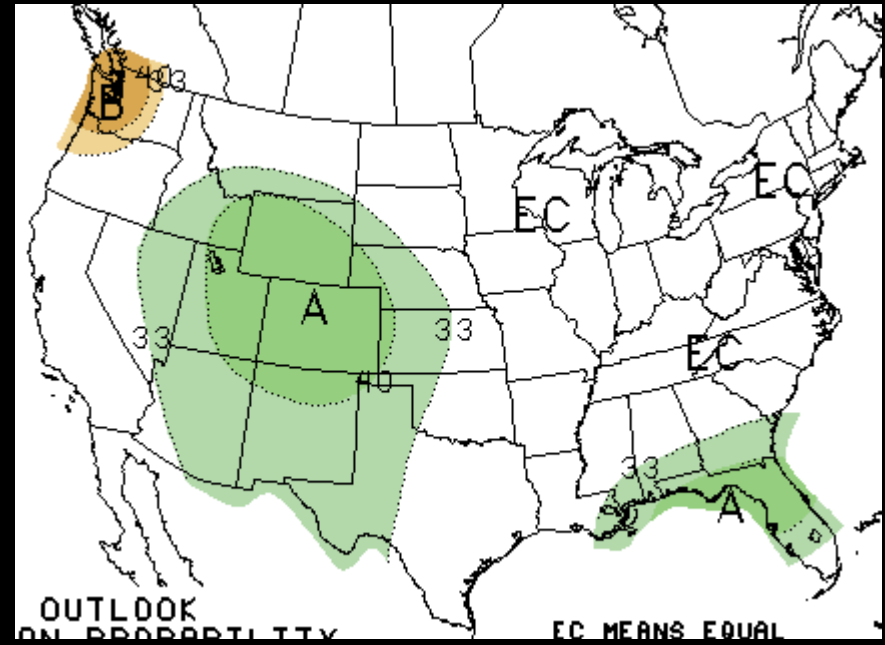
Updated April 16

Temperature



- 33% to 50% chance temperatures will be above normal over all but extreme eastern Montana
- Equal chances for above, below, or near normal extreme east

Precipitation



- 33% to 40% chance precipitation will be above normal across southern Montana
- Equal chances for above, below, or near normal central and north

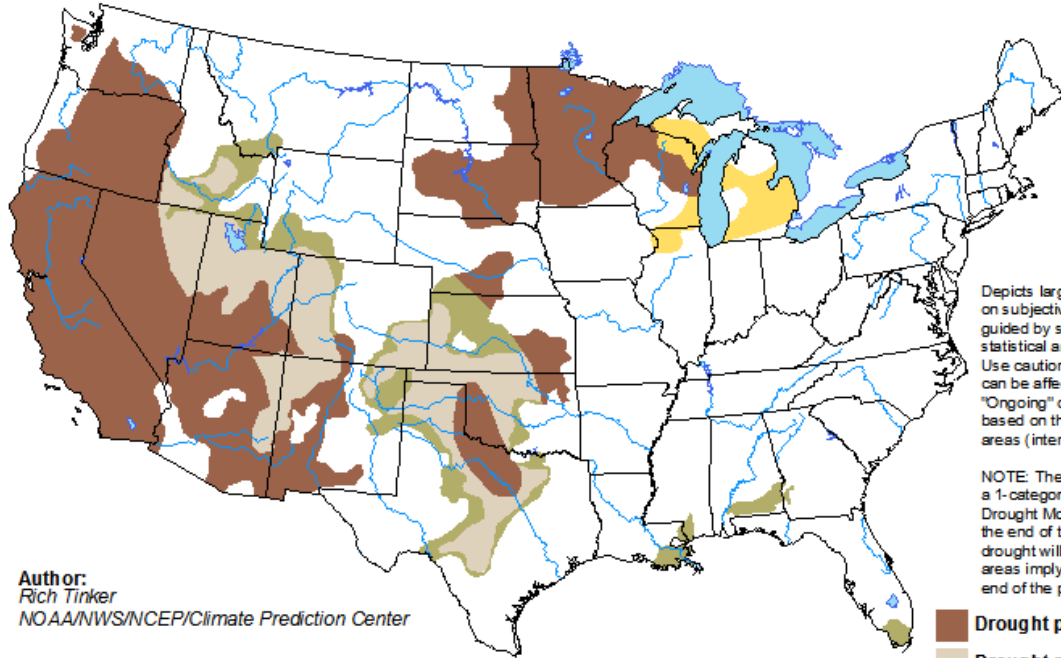
Drought Outlook through July

Issued April 16

U.S. Seasonal Drought Outlook

Drought Tendency During the Valid Period

Valid for April 16 - July 31, 2015
Released April 16, 2015



Author:
Rich Tinker
NOAA/NWS/NCEP/Climate Prediction Center

Depicts large-scale trends based on subjectively derived probabilities guided by short- and long-range statistical and dynamical forecasts. Use caution for applications that can be affected by short lived events. "Ongoing" drought areas are based on the U.S. Drought Monitor areas (intensities of D1 to D4).

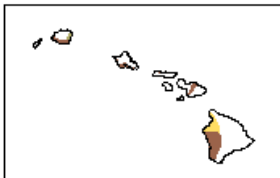
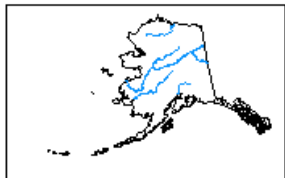
NOTE: The tan areas imply at least a 1-category improvement in the Drought Monitor intensity levels by the end of the period, although drought will remain. The green areas imply drought removal by the end of the period (D0 or none).

- Drought persists/intensifies
- Drought remains but improves
- Drought removal likely
- Drought development likely



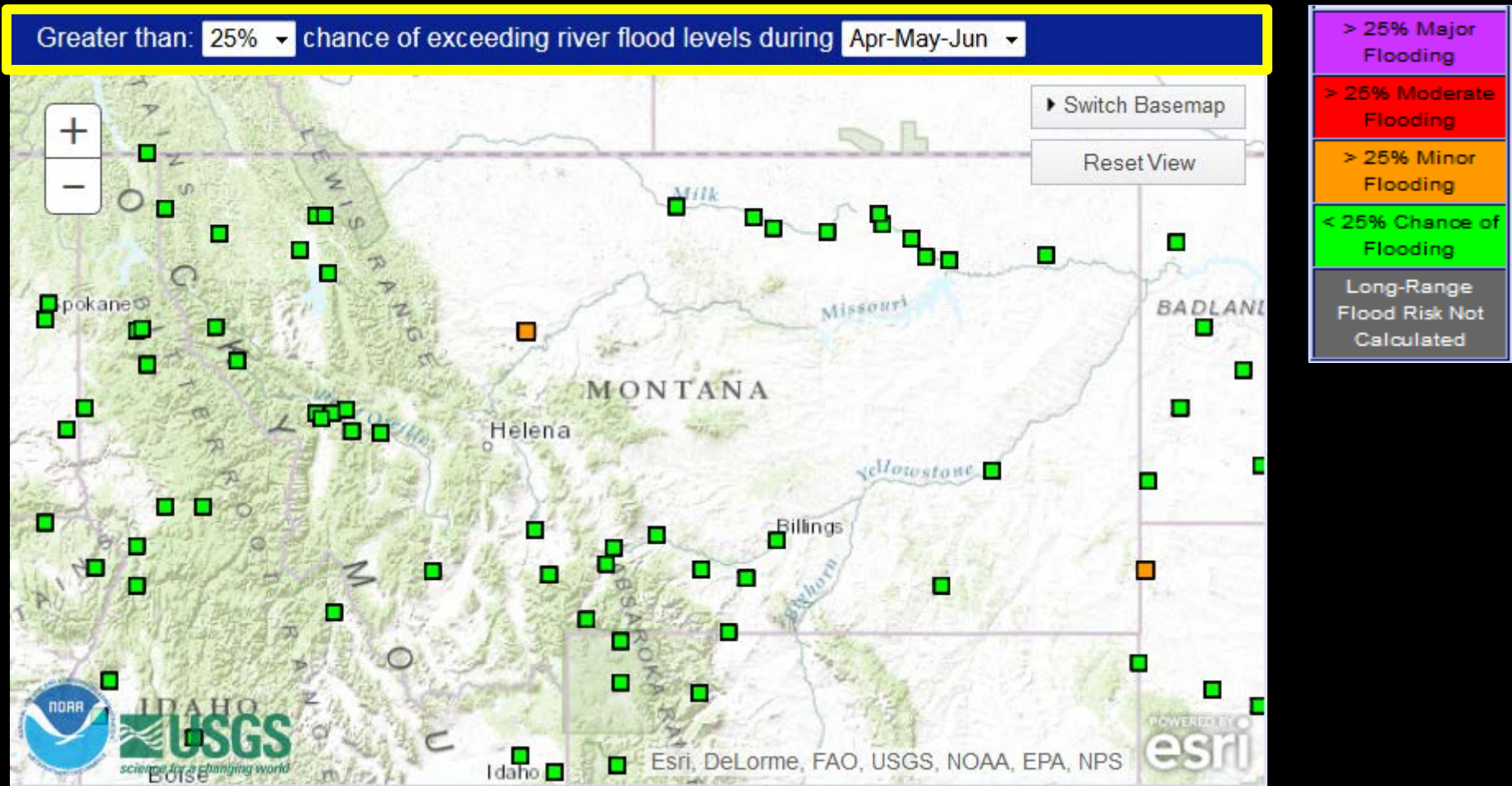
<http://go.usa.gov/hH7e>

- Drought area expanded into southwest Montana
- May be removed with next issuance depending on how upcoming storms play out



Probability of Flooding

April - June



In Summary...

- First half of water year – October to December – brought above normal temperatures with near normal precipitation to much of Montana
- Second half of water year – January to March – has been drier and warmer than normal
- With warm temperatures, some storms brought rain during winter – even at higher elevations
- Chances for flooding from snowmelt are low
 - Game changing event could still result in flooding
- Drought/Water Supply mostly status quo through the winter, but continued warm temperatures, lack of precipitation, and wind are causing some drying – especially across southern portions of the state



weather.gov

weather.gov/billings

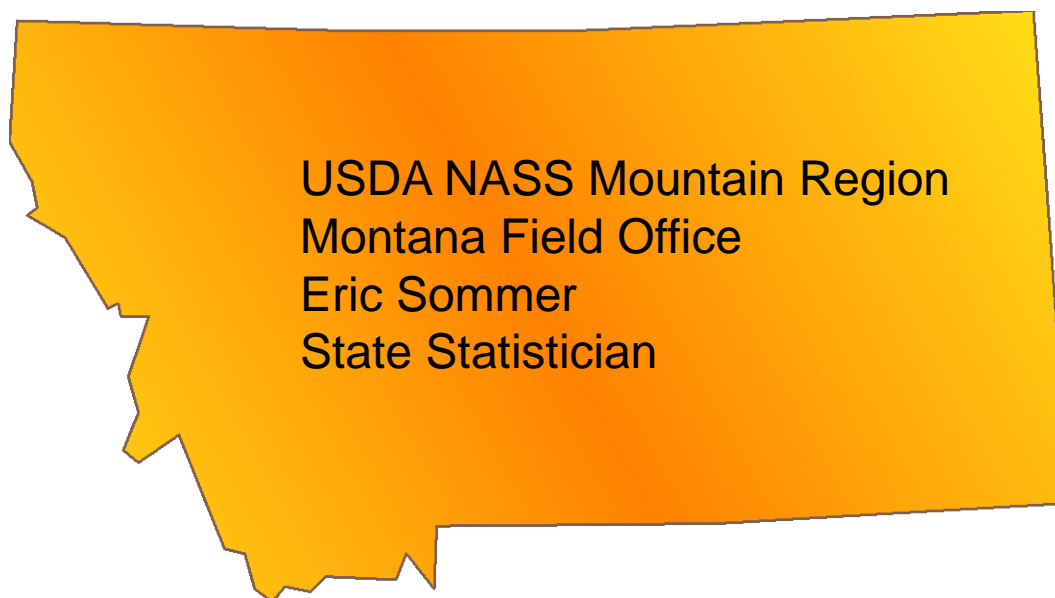
weather.gov/glasgow

weather.gov/missoula

weather.gov/greatfalls



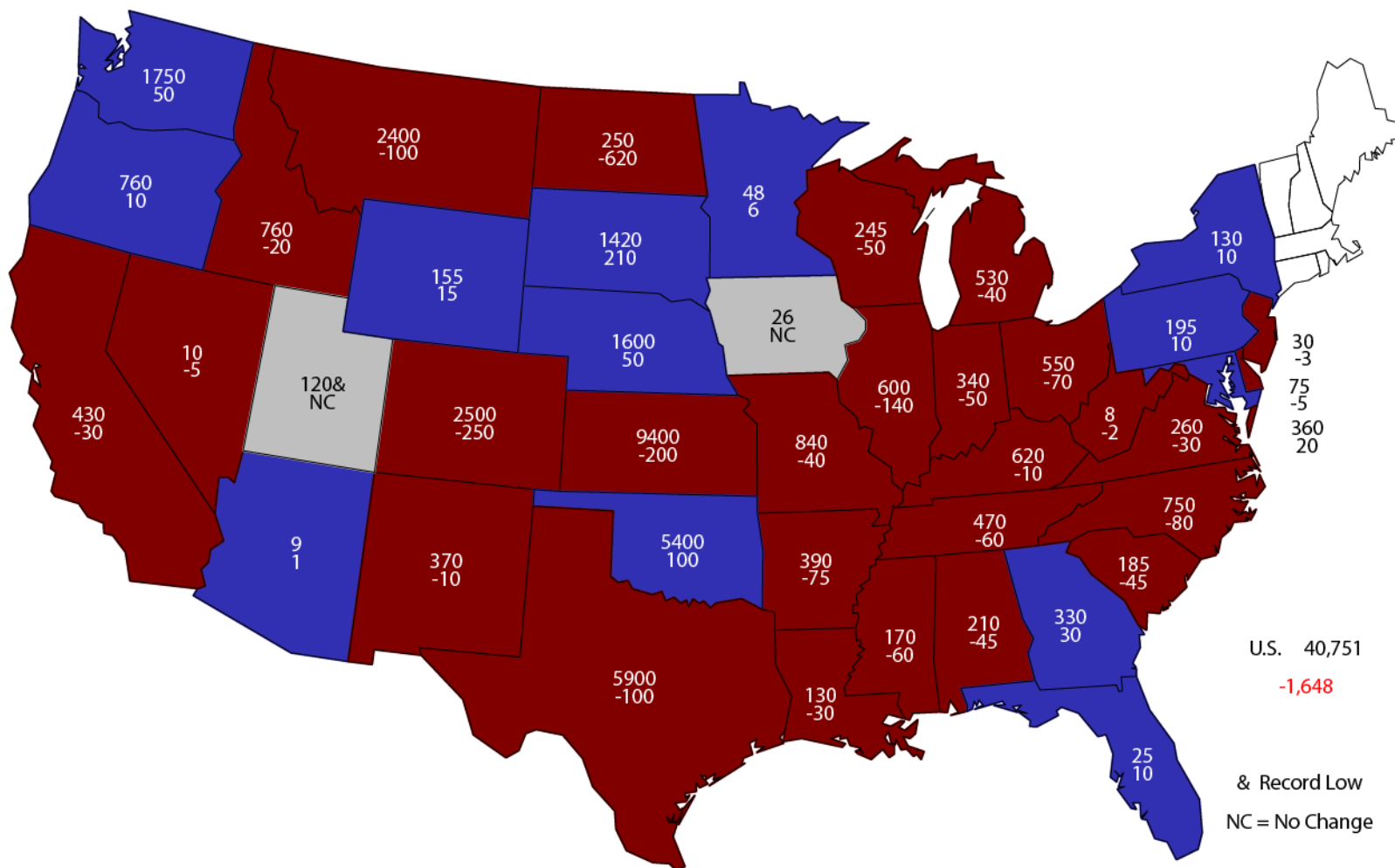
Governor's Drought & Water Supply Advisory Committee



March 2015 Montana Prospective Plantings

Food Grains	2015 Intentions Thou. Acres	2014 Planted Thou. Acres	% Change
All Wheat	5,780	5,985	-3.4 %
Winter Wheat	2,400	2,500	- 4.0 %
Durum	580	435	+ 33.3 %
Spring Wheat	2,800	3,050	- 8.2 %

2015 Winter Wheat Planted Area (000) Acres and Change From Previous Year



U.S. 40,751

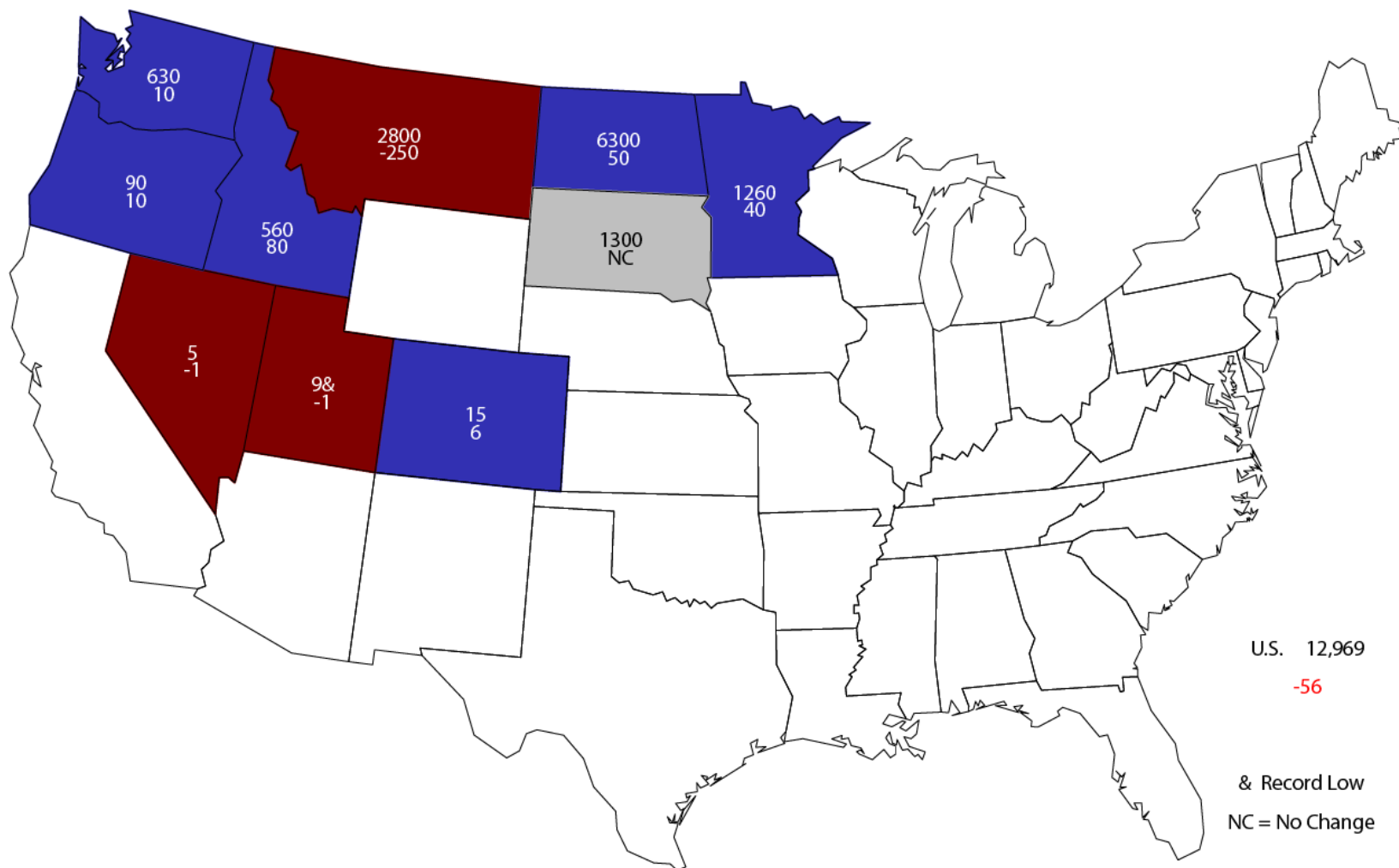
-1,648

& Record Low

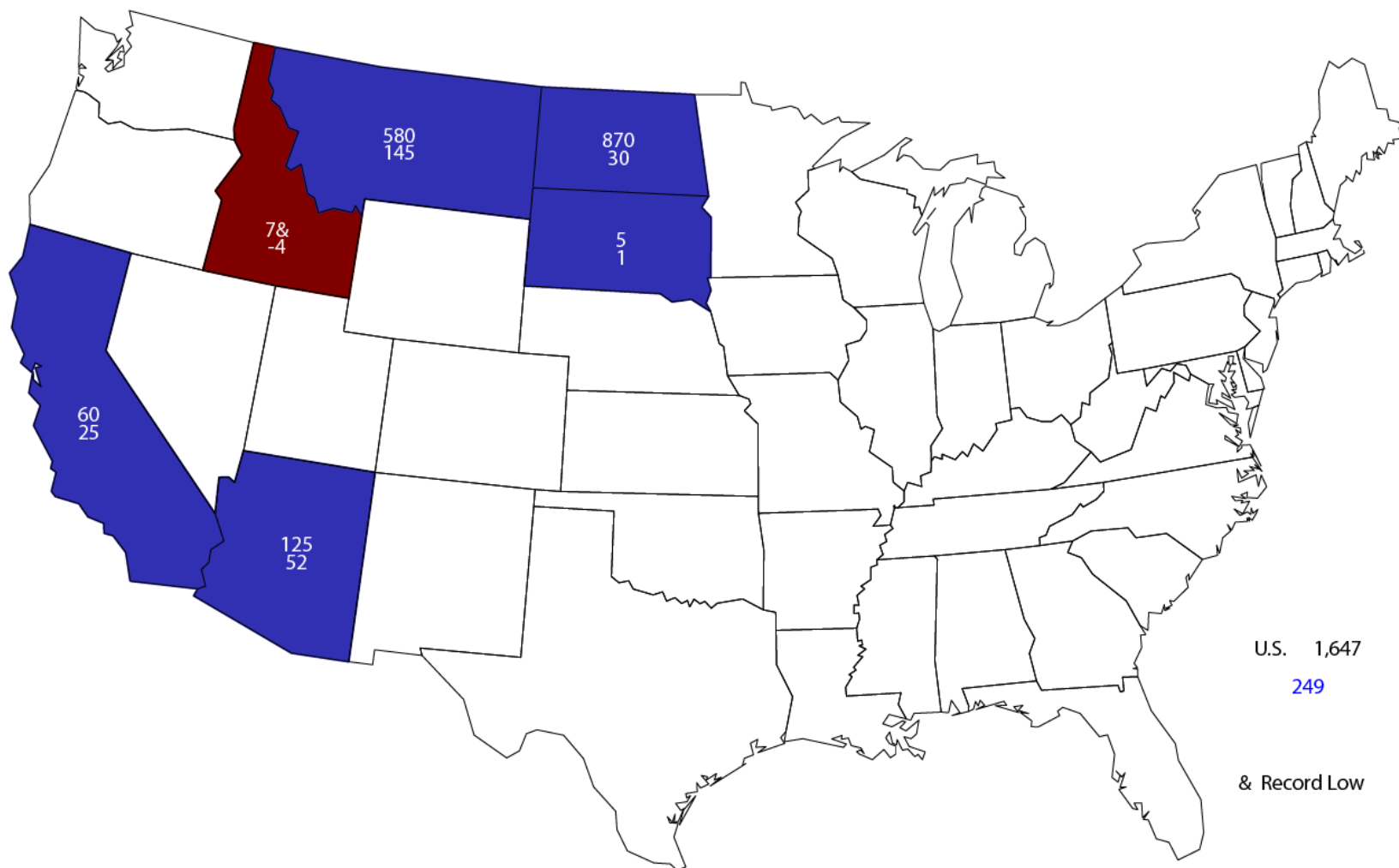
NC = No Change

2015 Other Spring Wheat Planted Area

(000) Acres and Change From Previous Year



2015 Durum Wheat Planted Area (000) Acres and Change From Previous Year

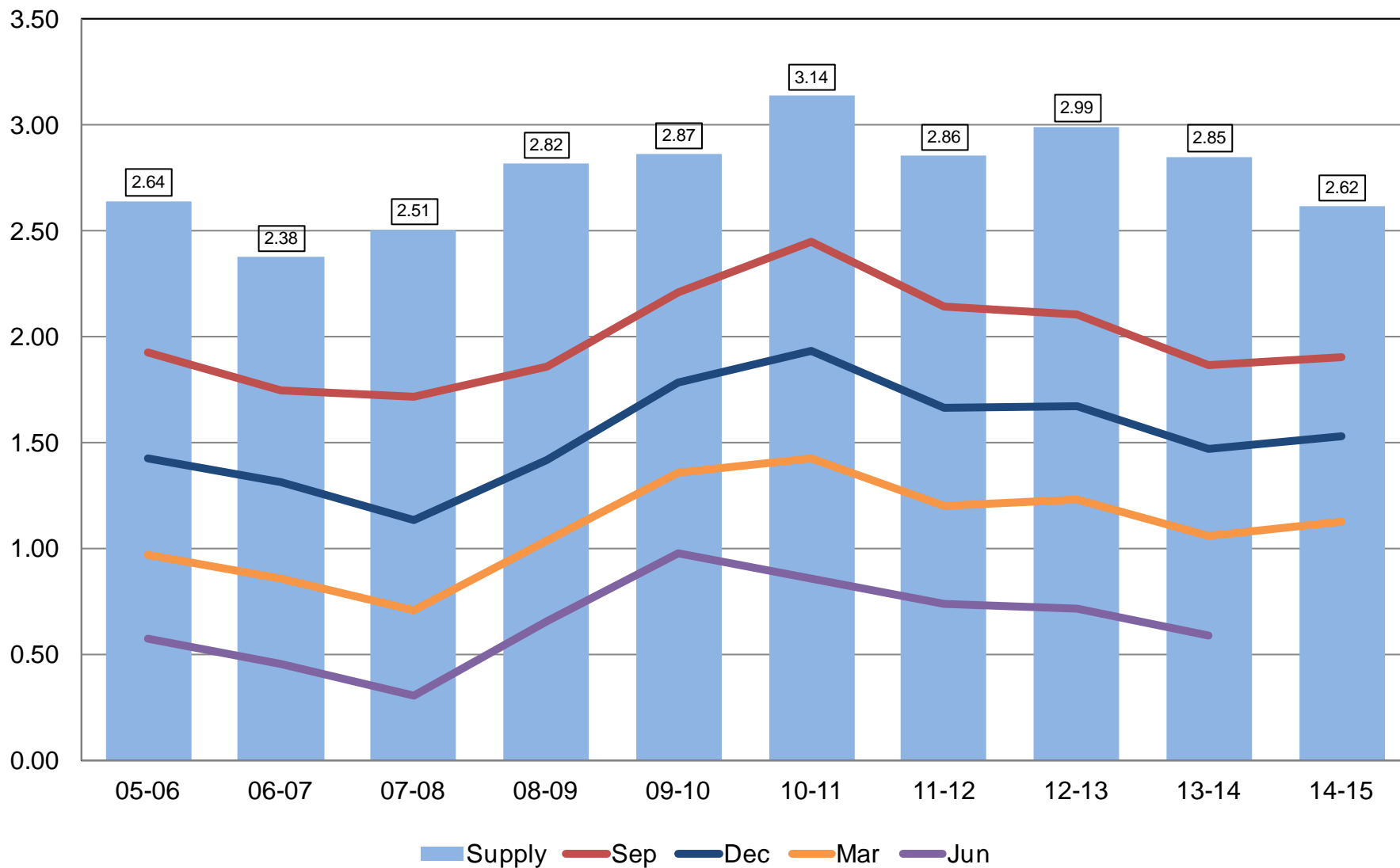


U.S. 1,647
249

& Record Low

All Wheat Stocks United States

Billion Bushels



March 2015 Montana Prospective Plantings

Feed Grains	2015 Intentions Thou. Acres	2014 Planted Thou. Acres	% Change
Corn	110	130	-15.4
Oats	50	45	+ 11.1
Barley	920	920	NC

March 2015 Montana Prospective Plantings

	2015 Intentions Thou. Acres	2014 Planted Thou. Acres	
Other Crops			% Change
All Hay (Harv)	2,800	2,730	+ 2.6 %
All Dry Peas	570	525	+ 8.6 %
Austrian Winter Peas	8	12	- 33.3 %
Lentils	180	130	+ 38.5 %

March 2015 Montana Prospective Plantings

	2015 Intentions Thou. Acres	2014 Planted Thou. Acres	
Other Crops			% Change
Sugar beets	42.6	45.0	- 5.3 %
All Dry Beans	53	37.5	+ 41.3 %
Flaxseed	18	28	- 35.7 %
Canola	60	63	- 4.8 %

Crop Weather Report

Week Ending April 12, 2015

- Topsoil and Subsoil conditions were lower than a year ago but comparable to the five year average.
- Seeding were ahead last year and the five year averages, due to dry weather conditions.

Topsoil Moisture

Week Ending April 12, 2015

	This week	Last week	Last year	5-yr avg.
Very short	7	8	2	8
Short	22	21	9	17
Adequate	61	58	72	61
Surplus	10	13	17	14

Subsoil Moisture

Week Ending April 12, 2015

	This week	Last week	Last year	5-yr avg.
Very short	6	6	3	9
Short	21	21	10	20
Adequate	53	53	76	63
Surplus	20	20	11	8

Winter Wheat Condition

Week Ending April 12, 2015

	Very poor	Poor	Fair	Good	Excellent
This week	2	6	30	33	29
Last week	2	6	31	33	28
Last year	1	4	30	56	9
5-yr avg.	1	6	35	51	7

Seeding Completed

Week Ending April 12, 2015

	This week	Last week	Last year	5-yr avg.
Spring Wheat	10	1	3	7
Barley	20	4	3	15
Oats	5	NA	NA	6

Livestock Grazing

Week Ending April 12, 2015

- 76 percent of grazing land was open, above last year's 44 percent and the five-year average of 59 percent
- 85 percent of cattle & calves and 80 percent of sheep & lambs were receiving supplemental feed

Range & Pasture Feed Condition

Week Ending April 12, 2015

	Very poor	Poor	Fair	Good	Excellent
This week	4	16	46	31	3
Last week	5	20	44	30	1
Last year	3	24	43	28	2
5-yr avg.	7	22	42	27	2

Calving & Lambing Completed Week Ending April 12, 2015

- 61 percent of cows have calved, ahead of last year's 54 percent and behind the five-year average of 65 percent
- 49 percent of ewes have lambed, compared to 38 percent last year and 50 percent for the five-year average

Summary

Week ending April 12, 2015

- Soil moisture conditions continue to be near average
- 5.0 days were suitable for field work during the week, compared to 2.9 days last year and 3.4 days for the five-year average
- Early spring planting of most crops was ahead of last year

May 1 Releases

- May Crop Production
 - Winter wheat yield and hay stocks May 1 forecast will be released on May 12
- May Agricultural Prices
 - Released May 28

USDA, NASS, Montana Field Office

Eric Sommer, State Statistician

1-800-835-2612 or 406-441-1240

Email: nass-mt@nass.usda.gov

www.nass.usda.gov/mt/

[http://www.nass.usda.gov/Statistics_by_State/Montana
Publications/Crop_Progress_&_Condition/index.asp](http://www.nass.usda.gov/Statistics_by_State/Montana/Publications/Crop_Progress_&_Condition/index.asp)

Governor's Drought Advisory Committee Snowpack and Streamflow Update April 16th, 2015

Lucas Zukiewicz
Water Supply Specialist (Snow Hydrologist)
USDA-NRCS
Montana Snow Surveys
Lucas.Zukiewicz@mt.usda.gov
406-587-6843

Yellowstone River near Corwin Springs, 1
day after peak flows, end of May 2014

[http://www.nrcs.usda.gov/wps/portal/nrcs/main/
mt/snow/](http://www.nrcs.usda.gov/wps/portal/nrcs/main/mt/snow/)

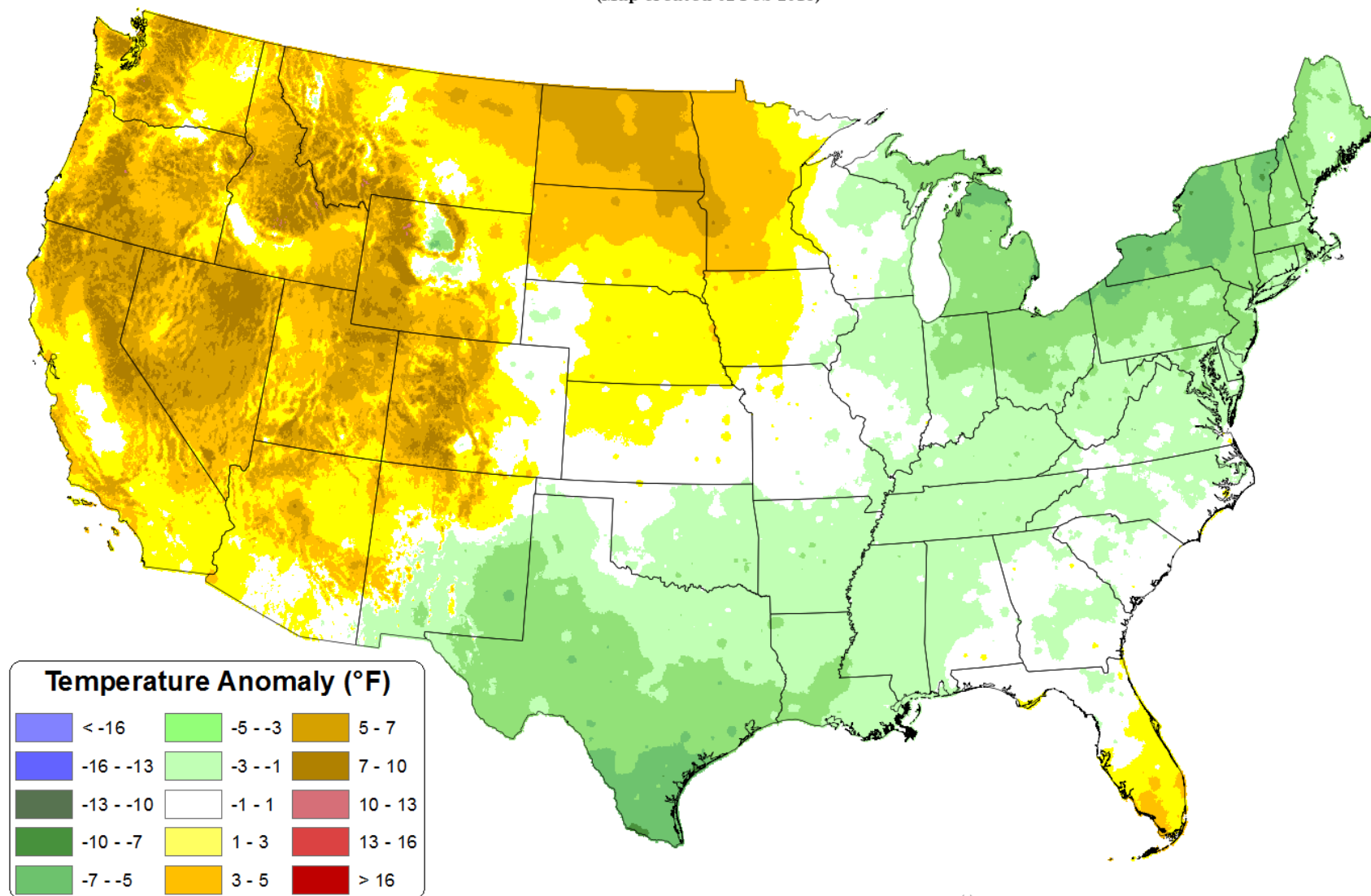
Temperature

Daily Mean Temperature Anomaly: January 2015

Period ending 7 AM EST 31 Jan 2015

Base period: 1981-2010

(Map created 02 Feb 2015)

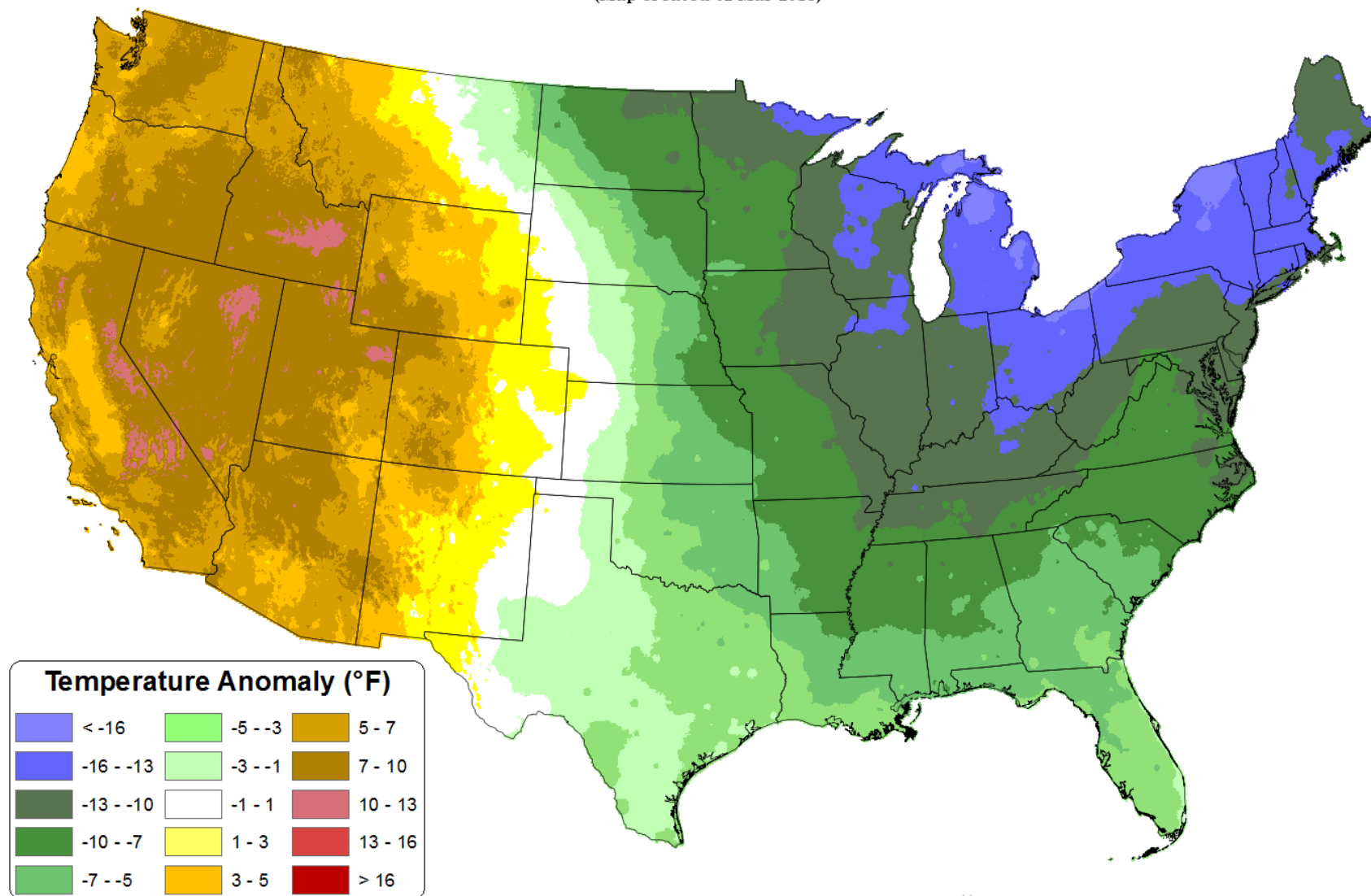


Daily Mean Temperature Anomaly: February 2015

Period ending 7 AM EST 28 Feb 2015

Base period: 1981-2010

(Map created 02 Mar 2015)

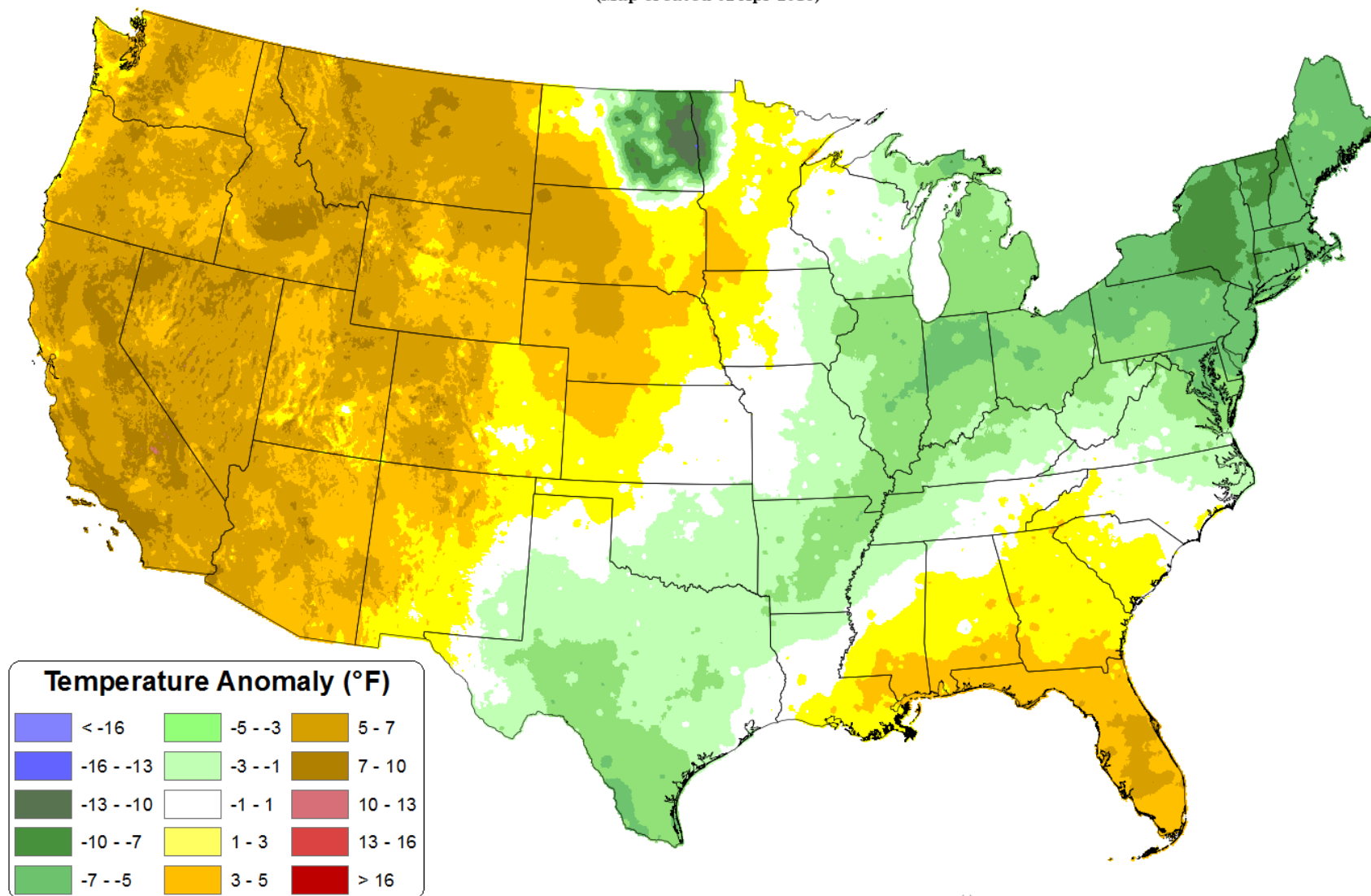


Daily Mean Temperature Anomaly: March 2015

Period ending 7 AM EST 31 Mar 2015

Base period: 1981-2010

(Map created 02 Apr 2015)

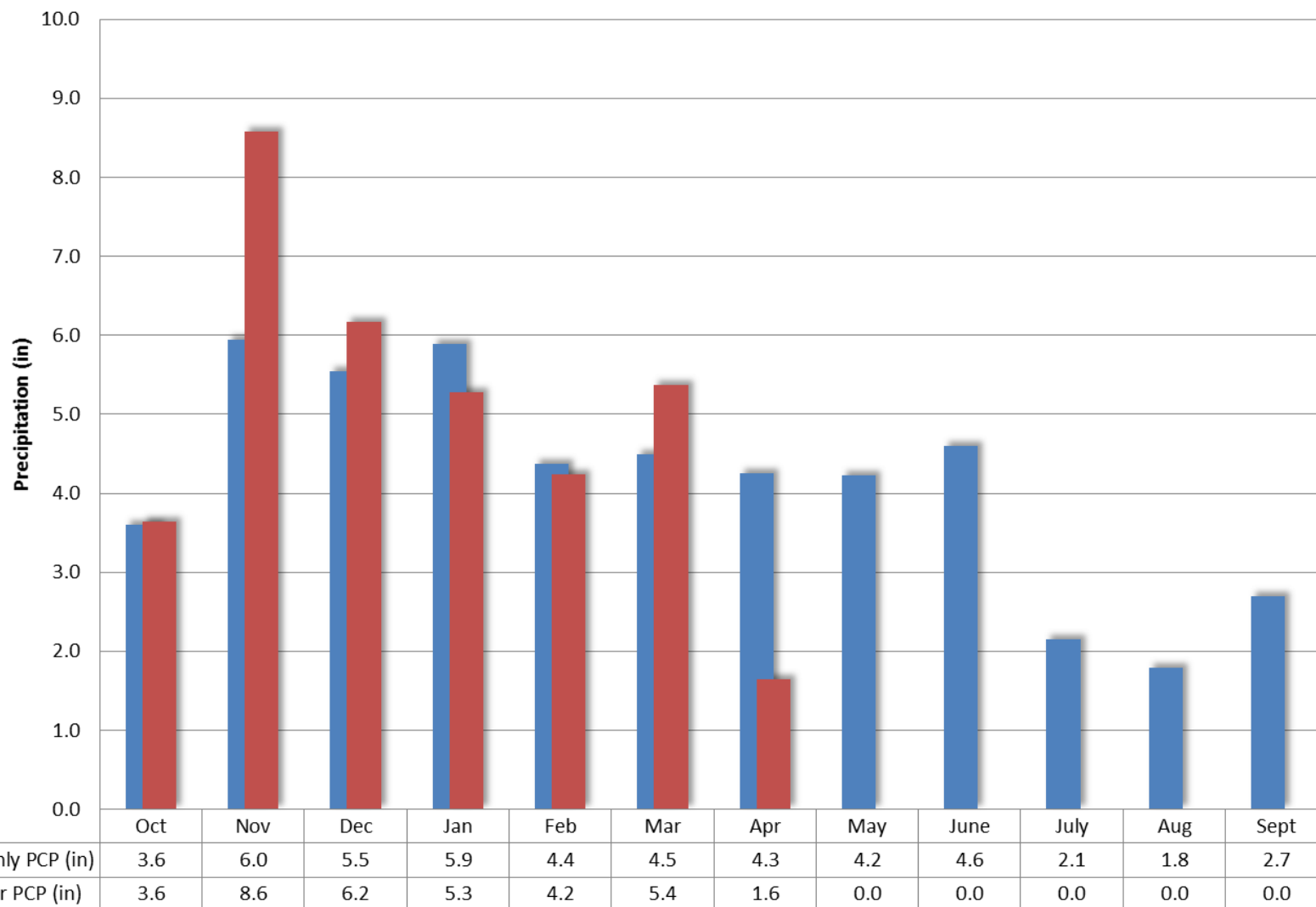


Precipitation

Flathead in Montana

SNOTEL Monthly Precipitation

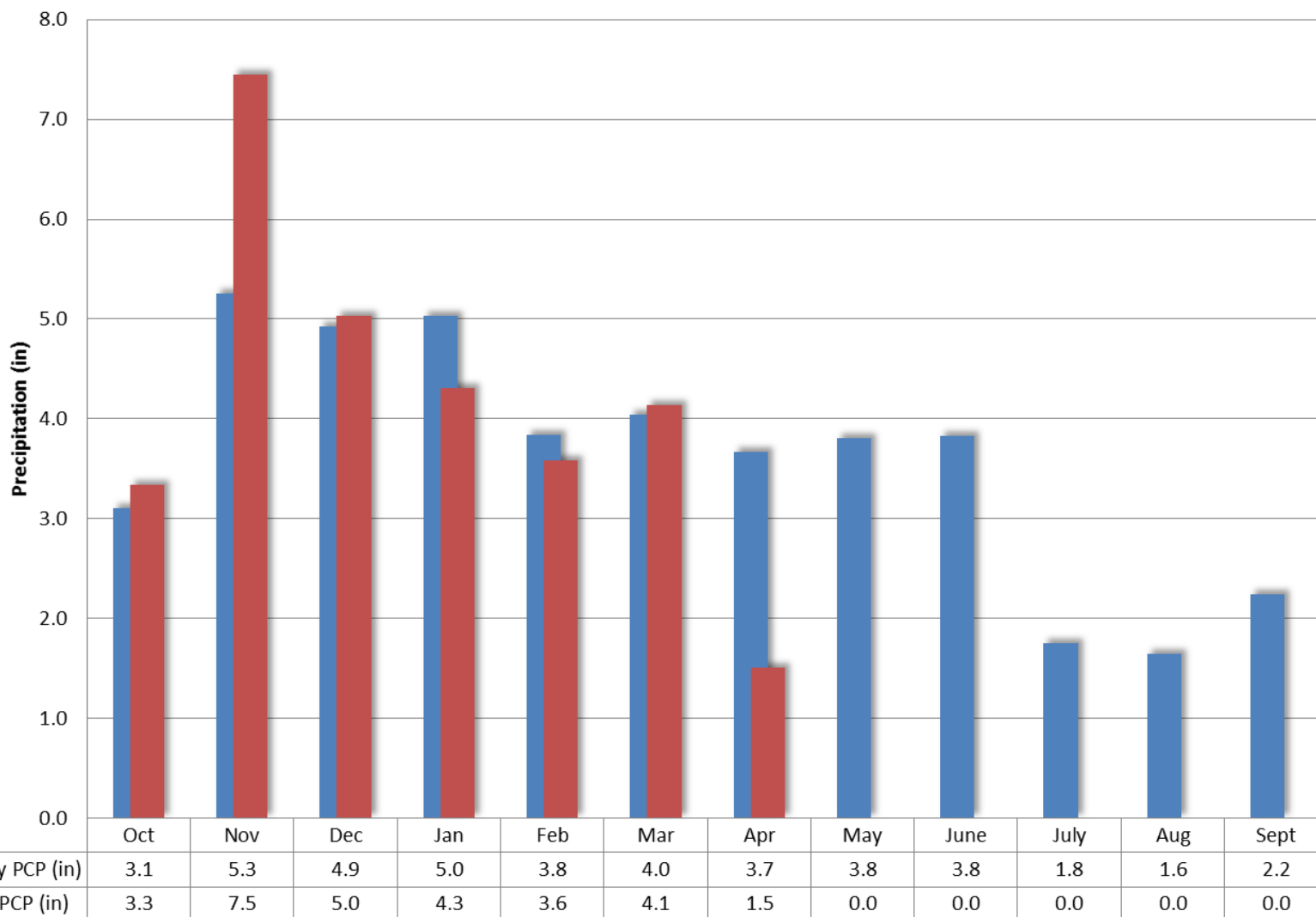
4/15/2015



Columbia In Montana

SNOTEL Monthly Precipitation

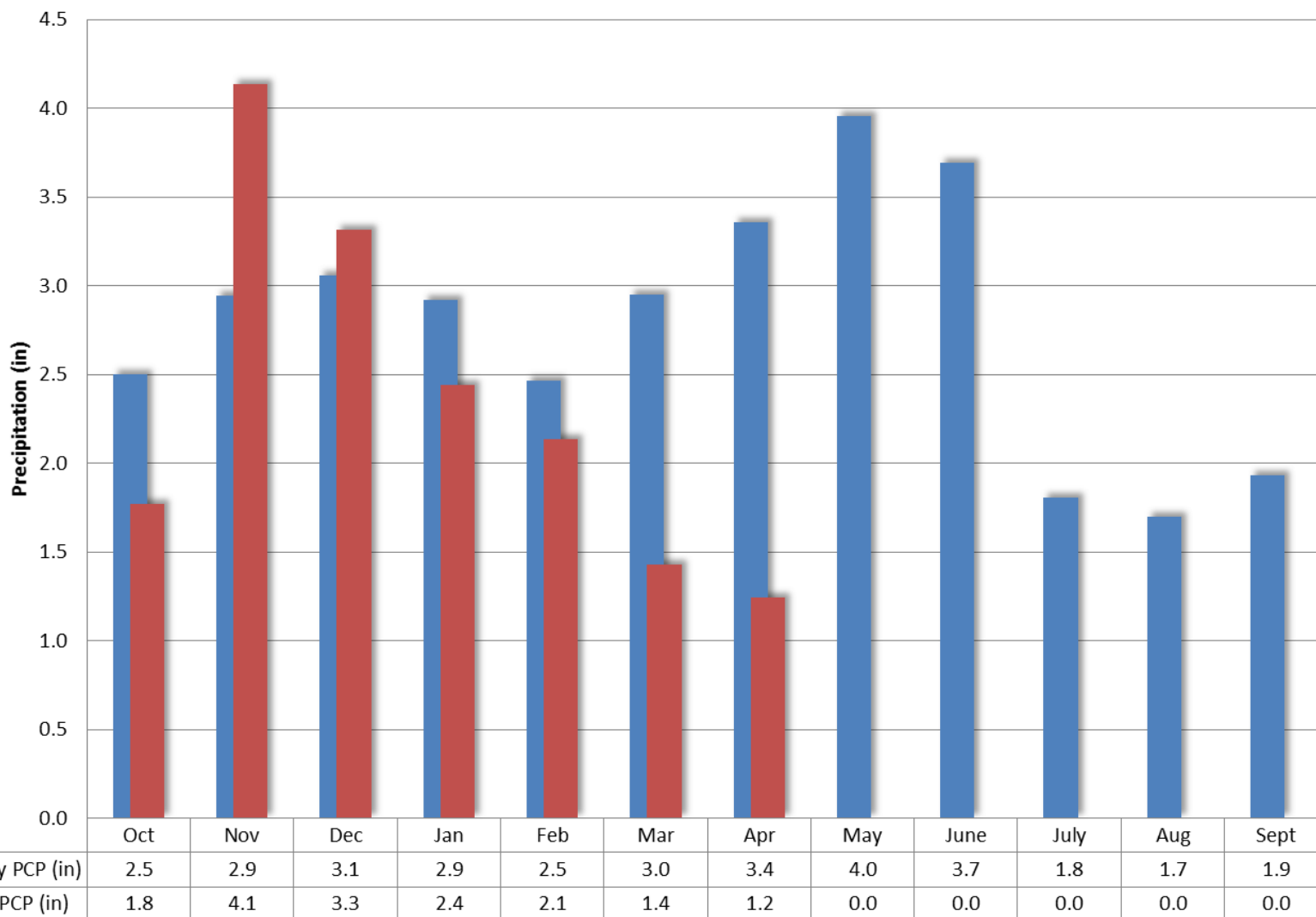
4/15/2015



Missouri River Basin

SNOTEL Monthly Precipitation

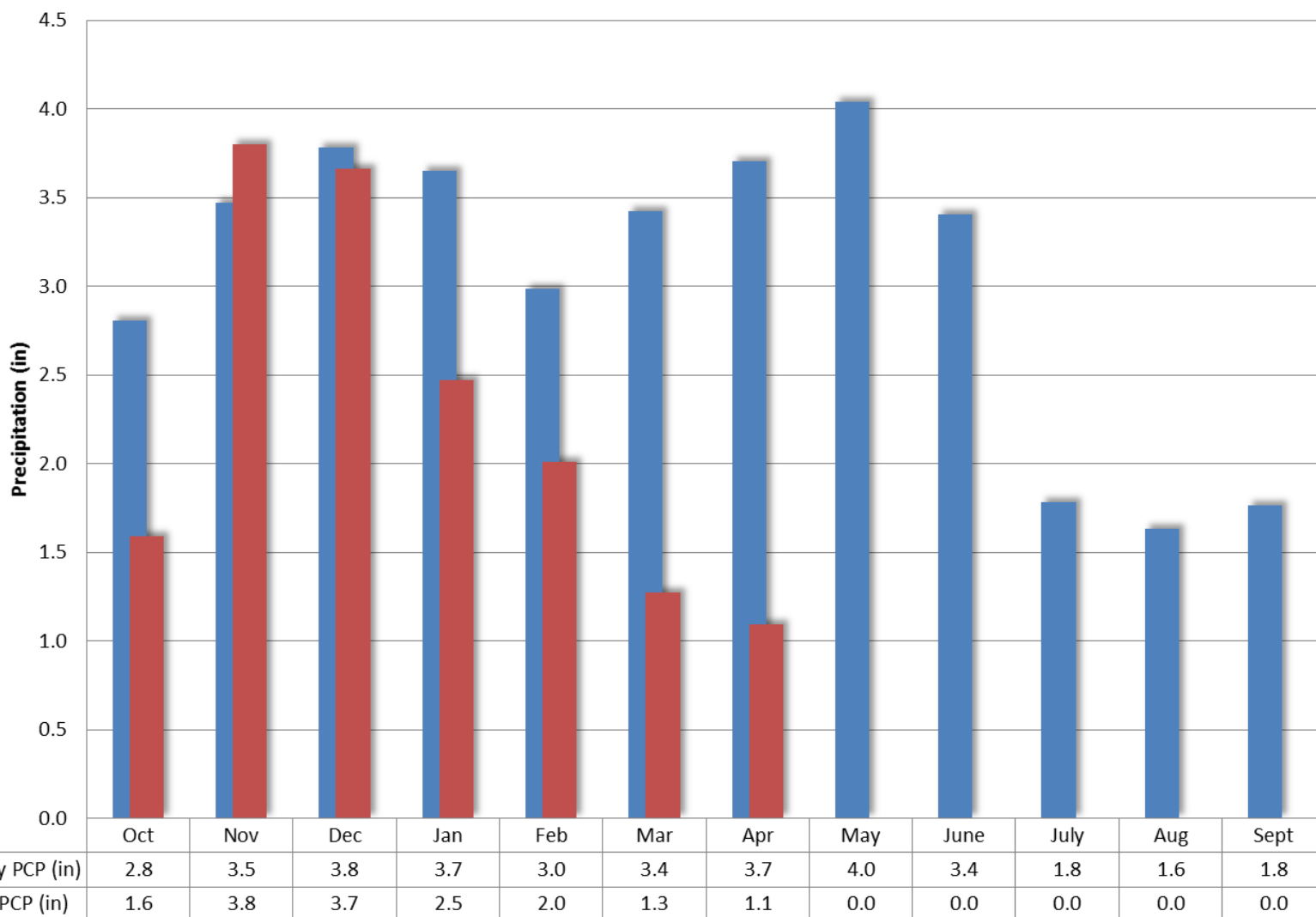
4/15/2015



Madison River Basin

SNOTEL Monthly Precipitation

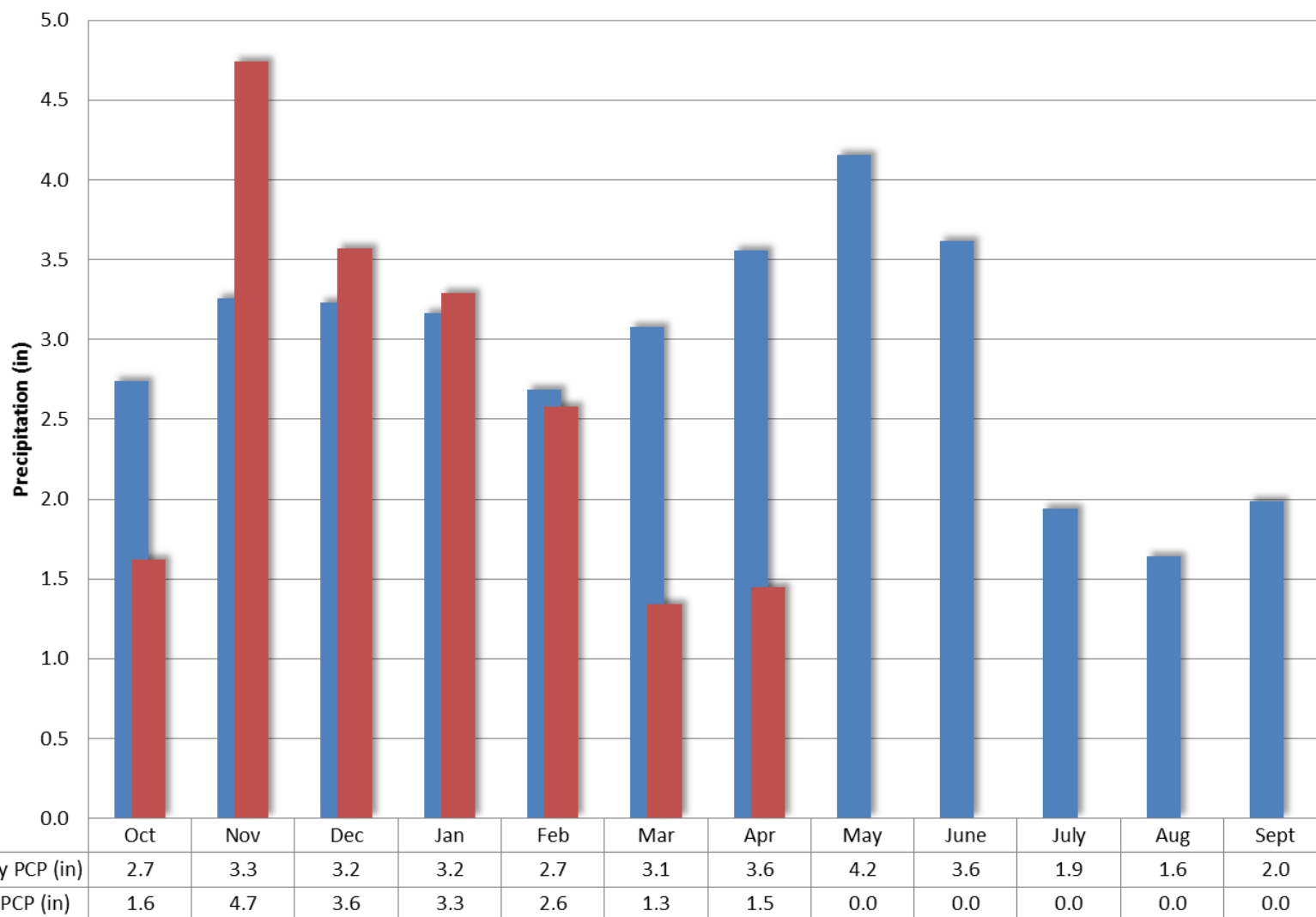
4/15/2015



Upper Yellowstone

SNOTEL Monthly Precipitation

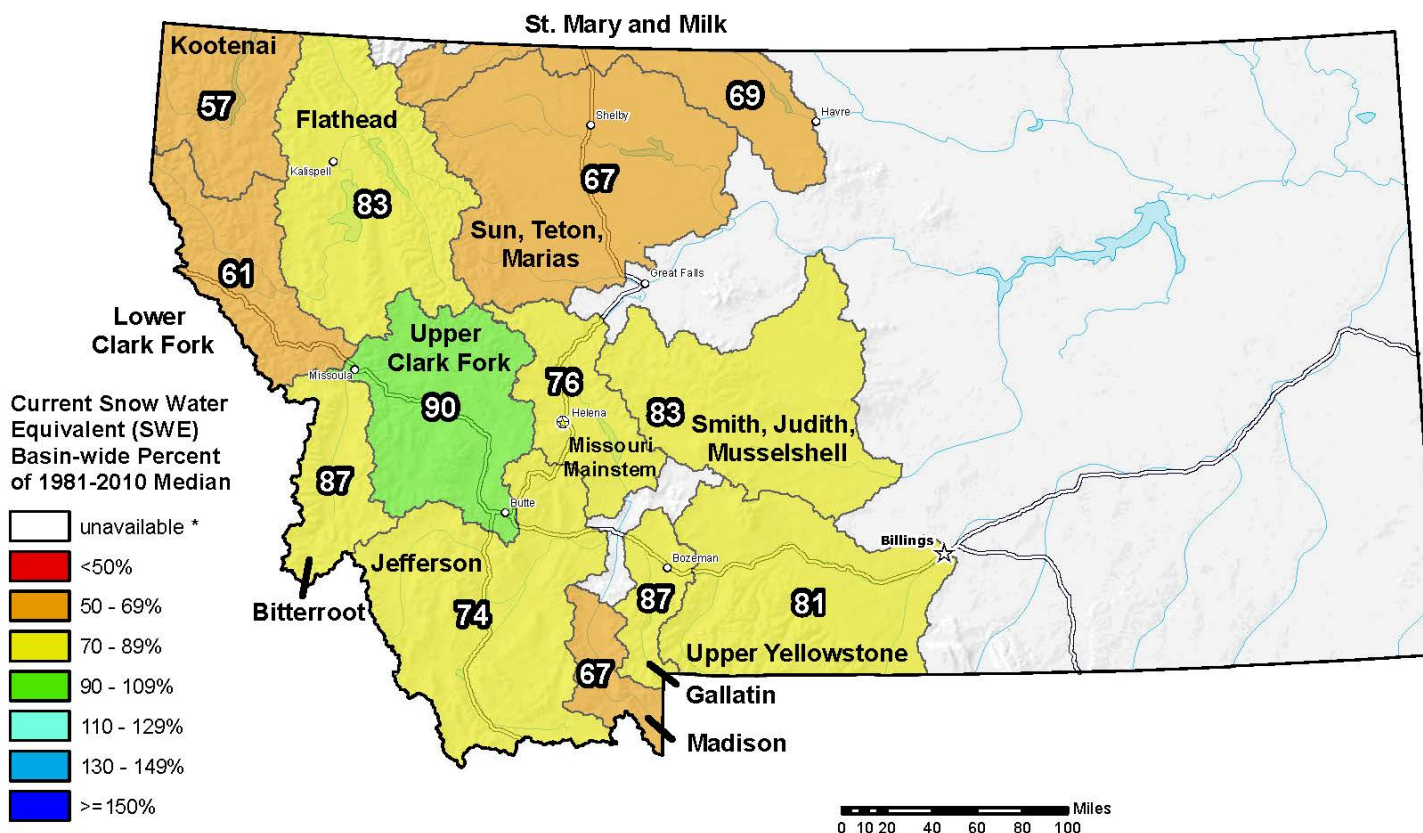
4/15/2015



Snowpack

Montana SNOTEL Current Snow Water Equivalent (SWE) % of Normal

Apr 15, 2015



* Data unavailable at time of posting or measurement is not representative at this time of year

**Provisional Data
Subject to Revision**

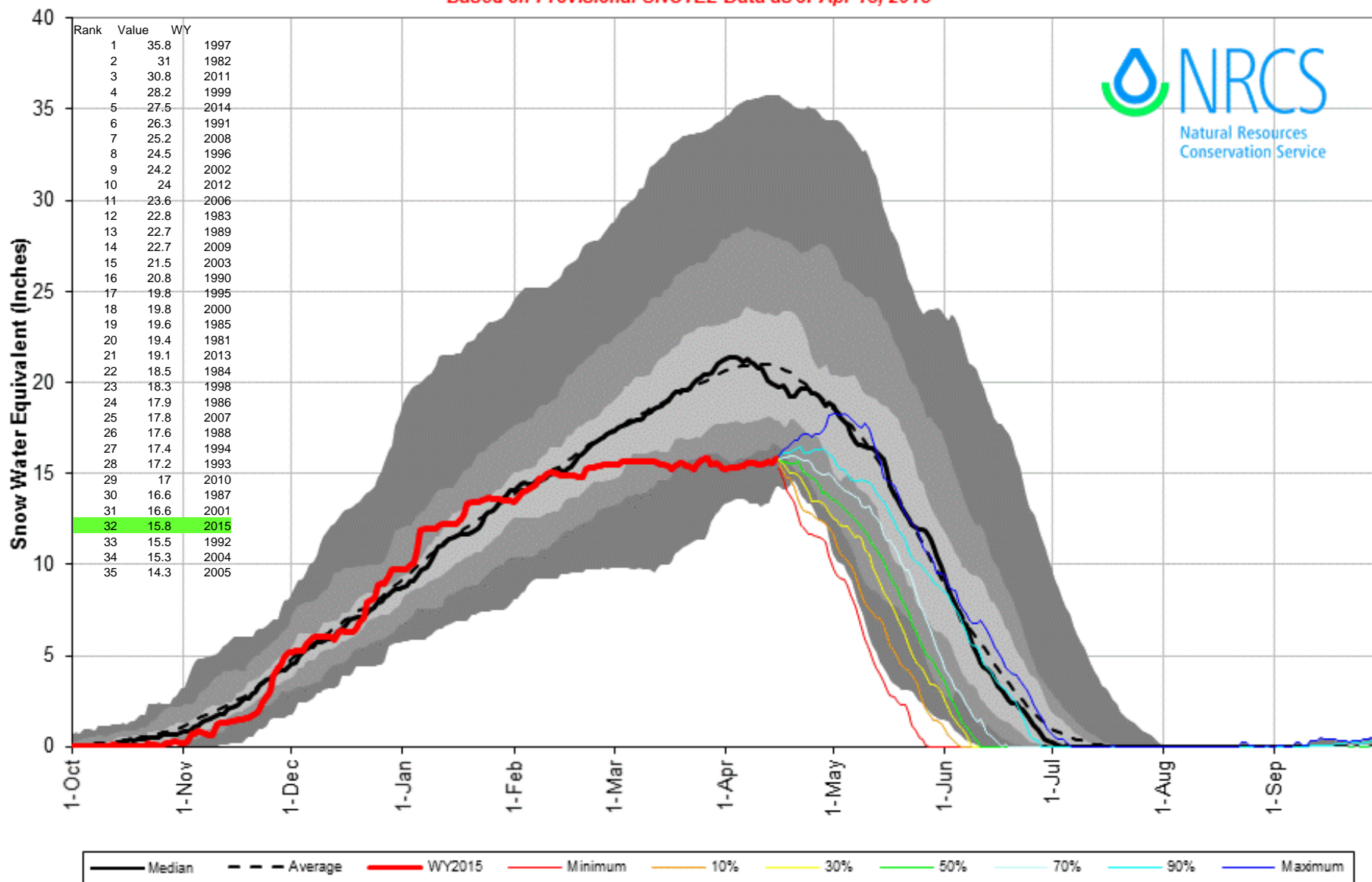


The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by:
USDA/NRCS National Water and Climate Center
Portland, Oregon
<http://www.wcc.nrcs.usda.gov>

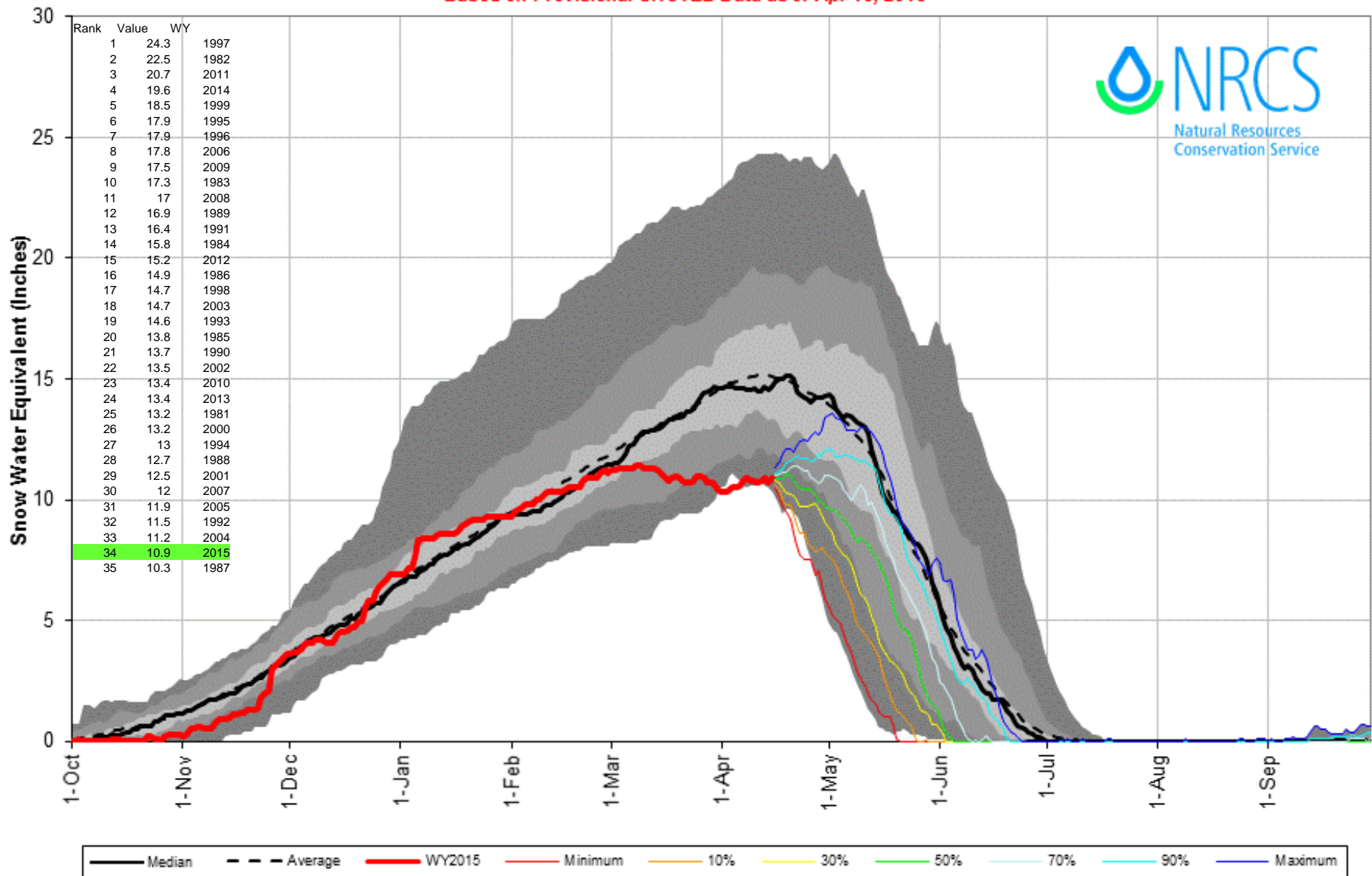
Columbia Snowpack with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Apr 15, 2015



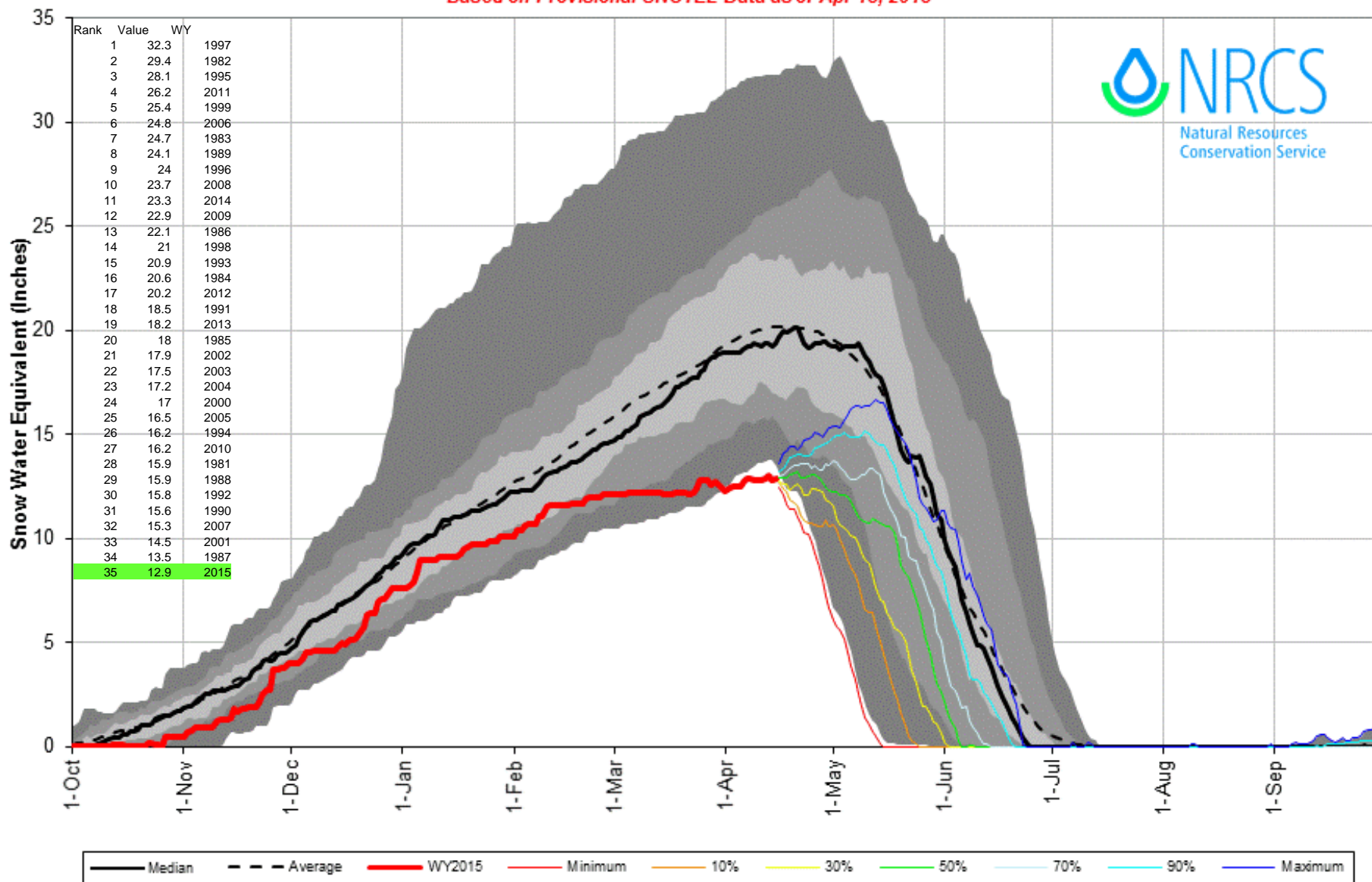
Missouri River above Fort Peck Snowpack with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Apr 15, 2015



Madison River Basin Snowpack with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Apr 15, 2015

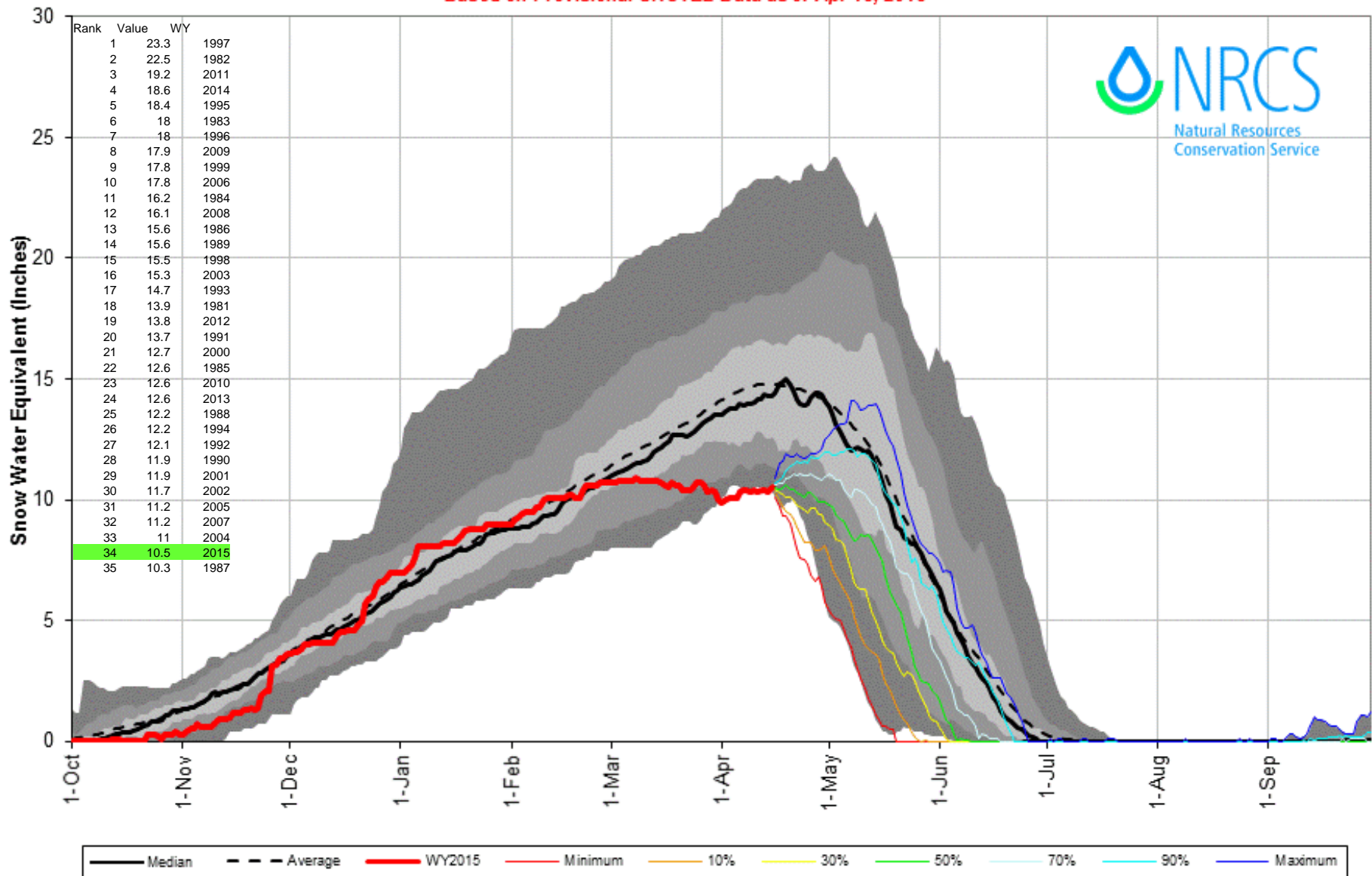


Montana Snow Survey



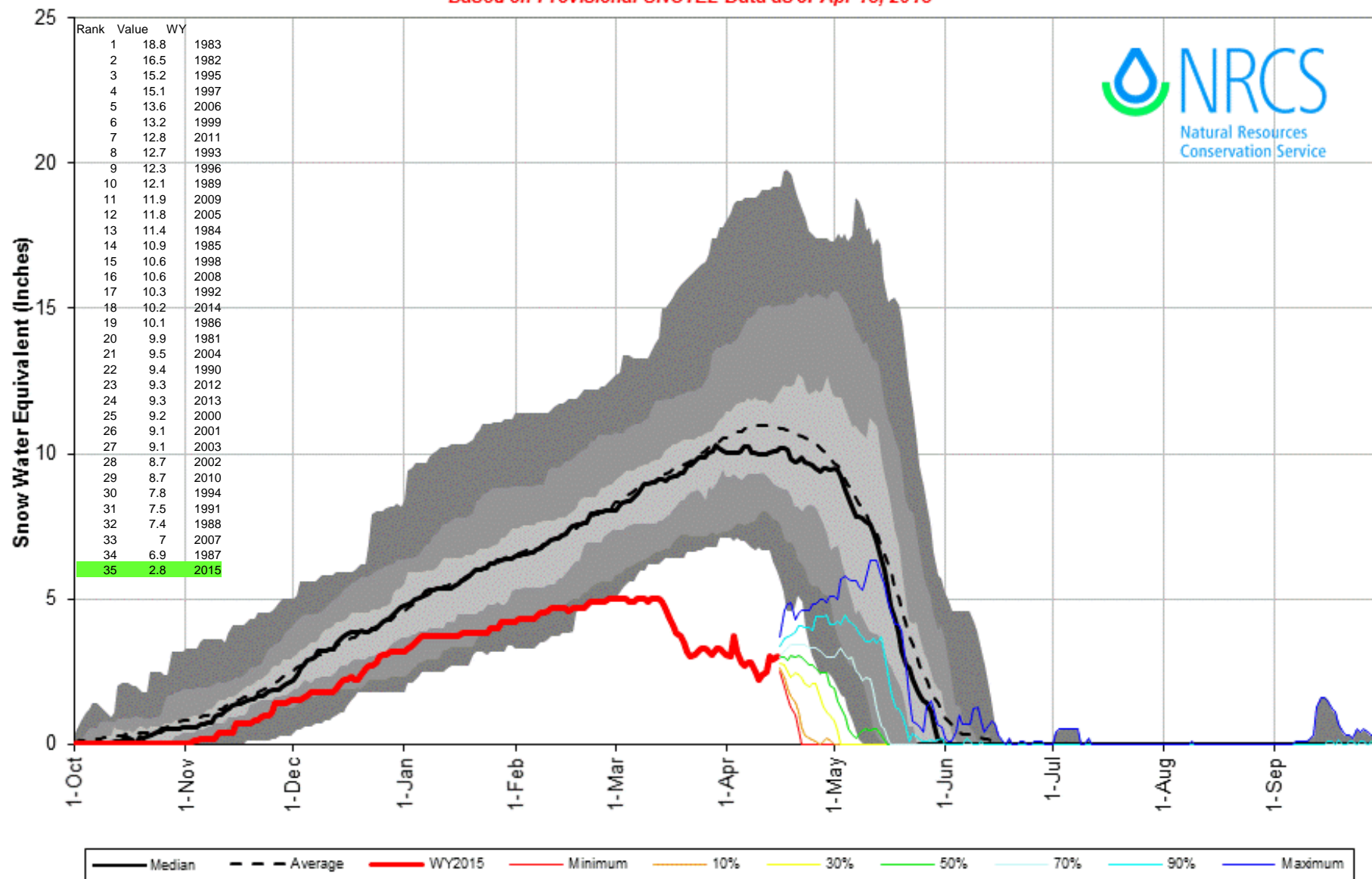
Jefferson River Basin Snowpack with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Apr 15, 2015



Red Rocks above Lima Snowpack with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Apr 15, 2015

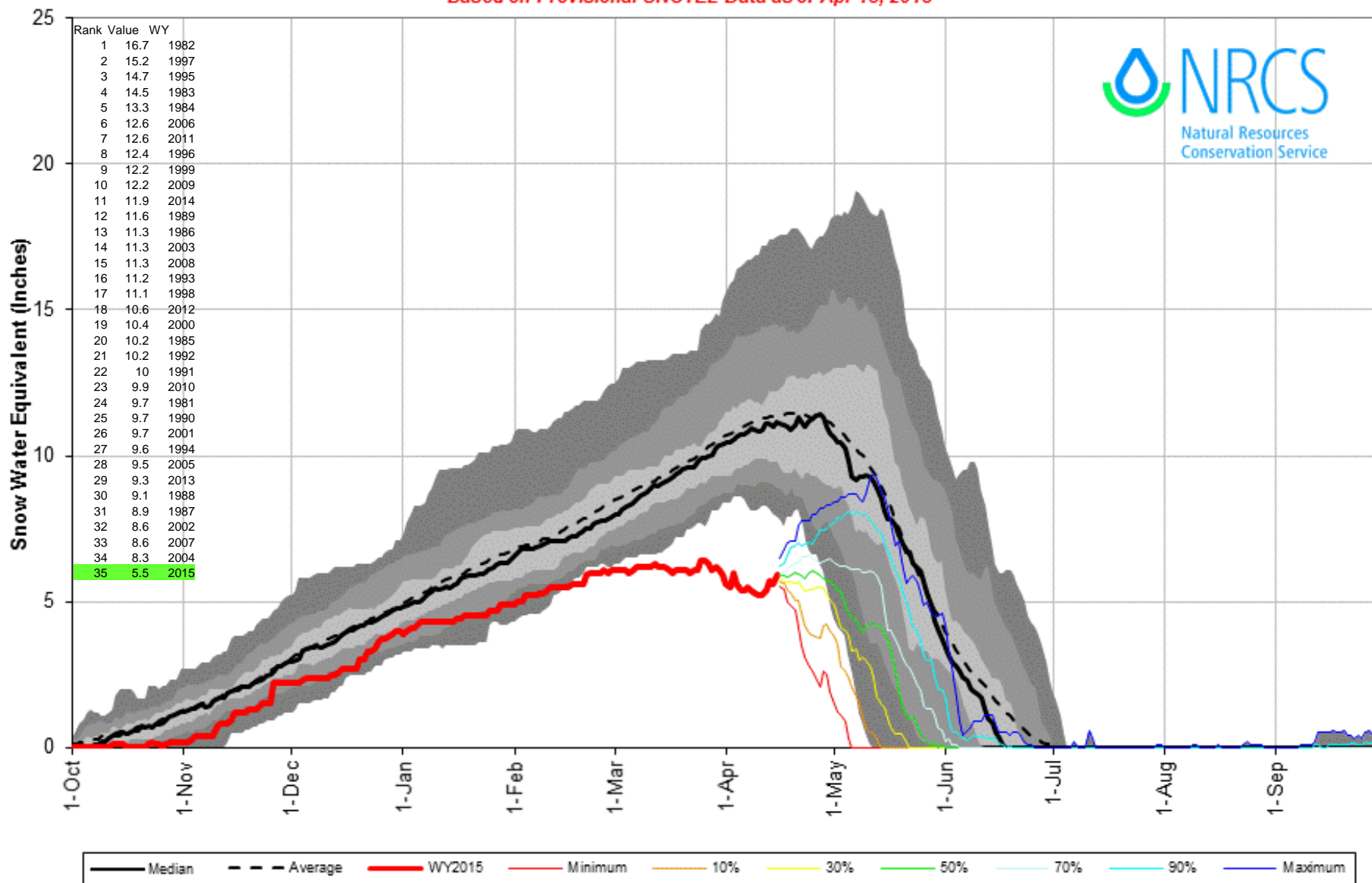


Montana Snow Survey



Ruby River above Reservoir Snowpack with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Apr 15, 2015

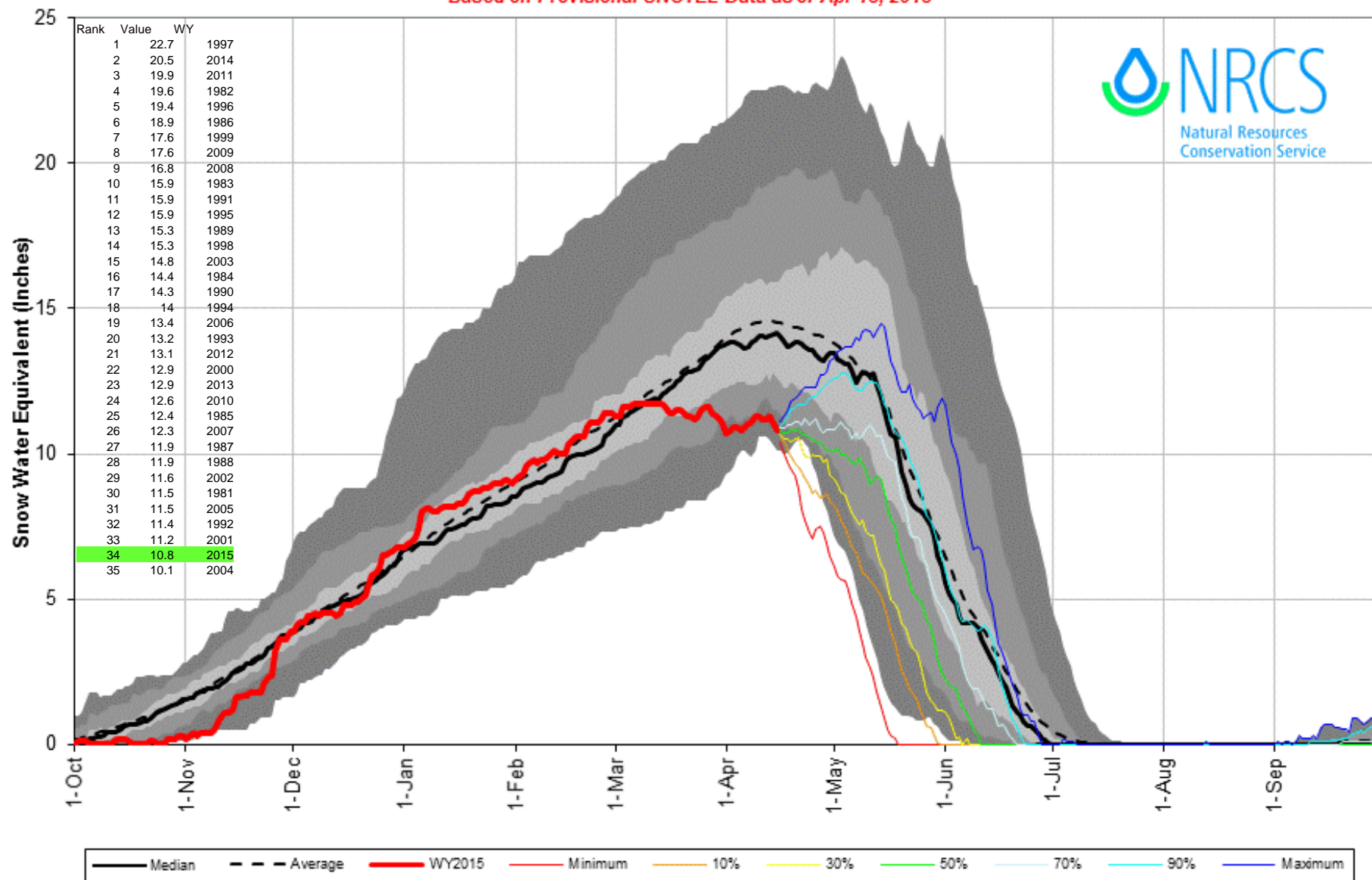


Montana Snow Survey



Yellowstone River Basin Snowpack with Non-Exceedence Projections

Based on Provisional SNOTEL Data as of Apr 15, 2015

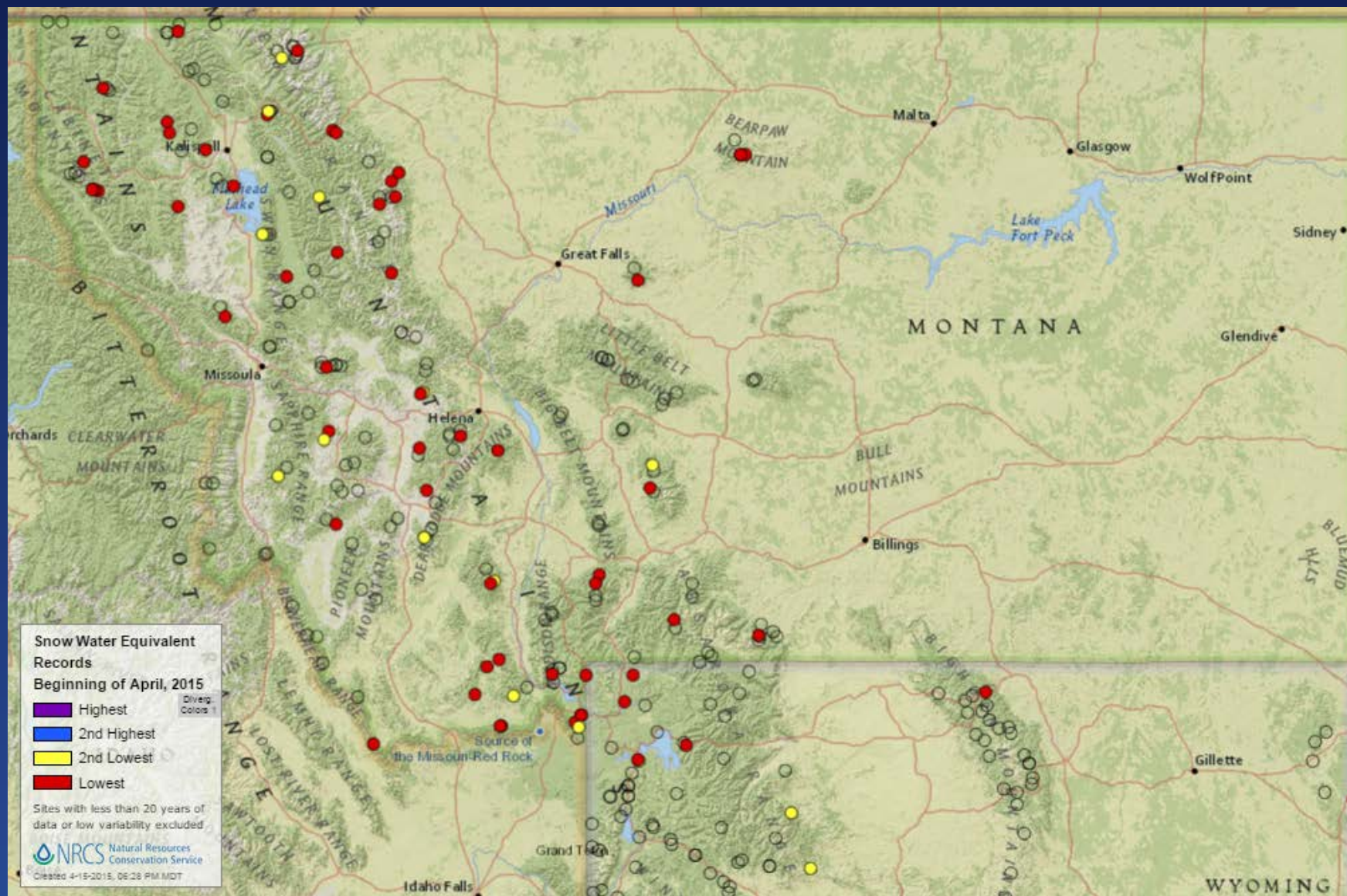


April 1, 2015 Snowpack Summary

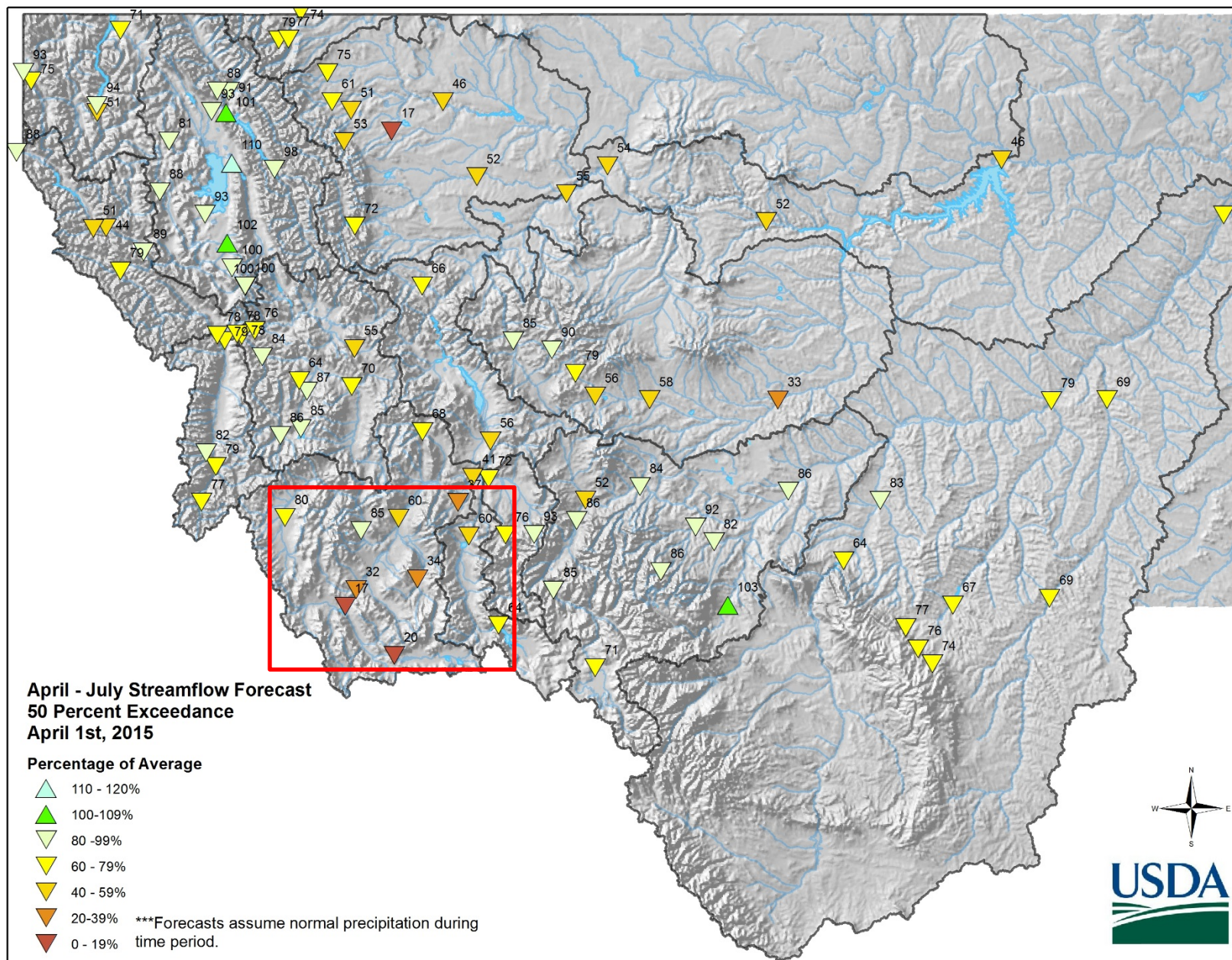
Using both SNOTEL
and Snow Course
observations

April 1 st , 2015 Snow Water Equivalent		
<i>River Basin</i>	April 1 % of Median	Monthly Change
Columbia	67	-19%
Kootenai	49	-11%
Flathead	72	-16%
Upper Clark Fork	77	-29%
Bitterroot	78	-20%
Lower Clark Fork	49	-16%
Missouri	67	-27%
Missouri Headwaters	70	-25%
Jefferson	74	-26%
Madison	62	-18%
Gallatin	77	-20%
Missouri Mainstem	67	-32%
Headwaters Mainstem	77	-35%
Smith-Judith Musselshell	81	-28%
Sun-Teton-Marias	53	-34%
Milk	0	-48%
St. Mary	53	-24%
St. Mary & Milk	45	-20%
Yellowstone	81	-26%
Upper Yellowstone	81	-25%
Lower Yellowstone	80	-27%
East of Divide	72	-26%
West of Divide	67	-19%
Statewide	68	--23%

April 1st, 2015 Record Low SWE



Montana Snow Survey



April-July Streamflow Forecast Period		
River Basin	Forecast as % of Average	Forecast as % Last Year's Flows
Columbia	89	67
Kootenai	92	79
Flathead	94	68
Upper Clark Fork	78	56
Bitterroot	79	47
Lower Clark Fork	86	55
Missouri	57	47
Missouri Headwaters	60	54
Jefferson	55	48
Madison	61	63
Gallatin	74	65
Missouri Mainstem	56	45
Headwaters Mainstem	56	46
Smith-Judith Musselshell	64	42
Sun-Teton-Marias	59	43
St. Mary	76	54
Yellowstone	80	52
Upper Yellowstone	86	59
Lower Yellowstone	76	48
Statewide	79	58

Summary

- For the third straight month we have seen declines in snowpack percentage of normal, due to:
 - Low to Mid elevation melt from well above average temperatures
 - Lack of significant snowfall and well below average March
- Streamflow prospects have dropped due to the drops in snowpack percentages and below normal precipitation
 - Streamflow prospects are below average in most basins across the state
 - Some forecasts are near record lows for certain gauges in SW Montana, and some water users should be aware

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Governor's Drought Advisory Committee Snowpack and Streamflow Update April 16th, 2015

Lucas Zukiewicz
Water Supply Specialist (Snow Hydrologist)
USDA-NRCS
Montana Snow Surveys
Lucas.Zukiewicz@mt.usda.gov
406-587-6843

Yellowstone River near Corwin Springs, 1
day after peak flows, end of May 2014

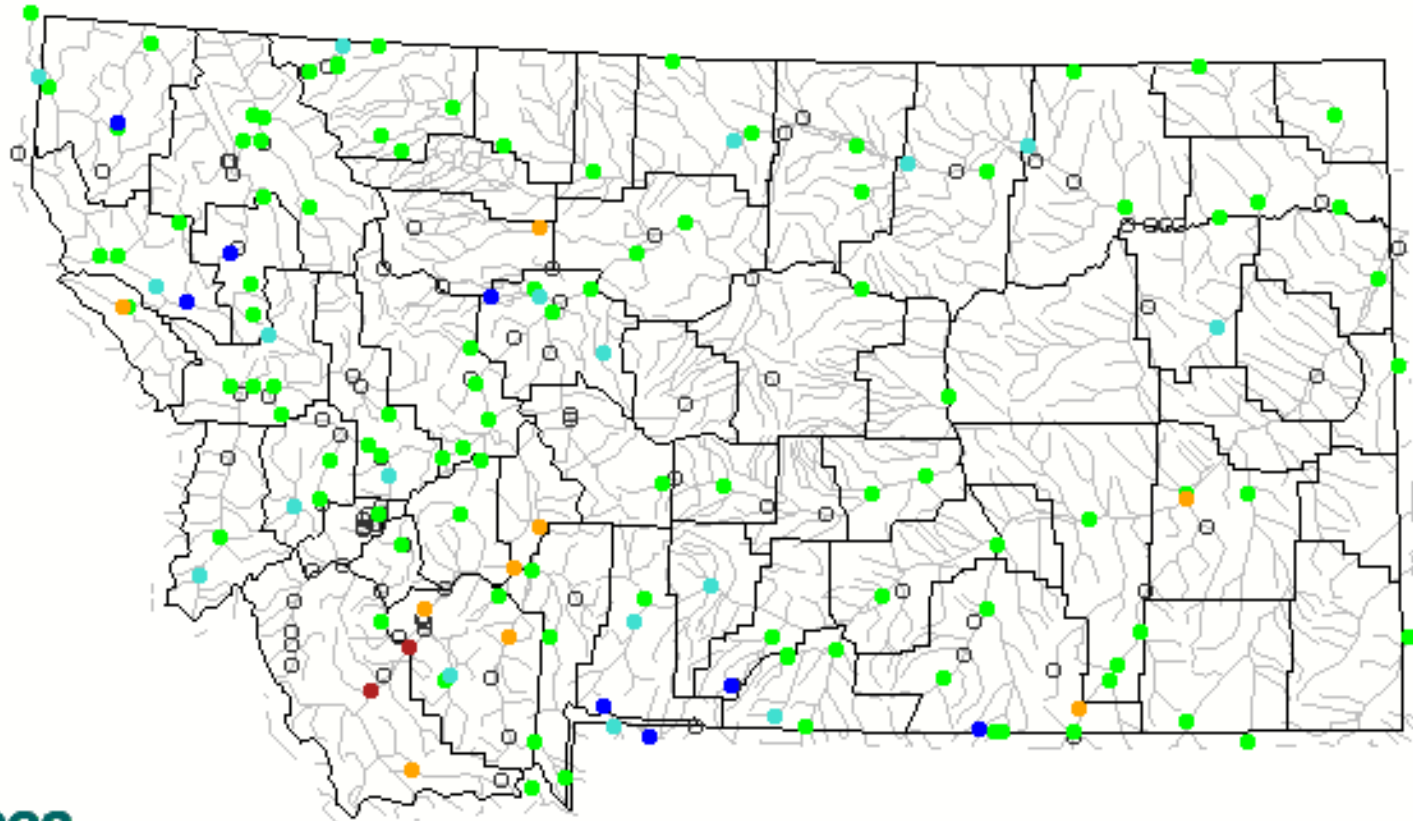
[http://www.nrcs.usda.gov/wps/portal/nrcs/main/
mt/snow/](http://www.nrcs.usda.gov/wps/portal/nrcs/main/mt/snow/)

USGS Streamflows, April 2015



DAILY STREAMFLOW CONDITIONS

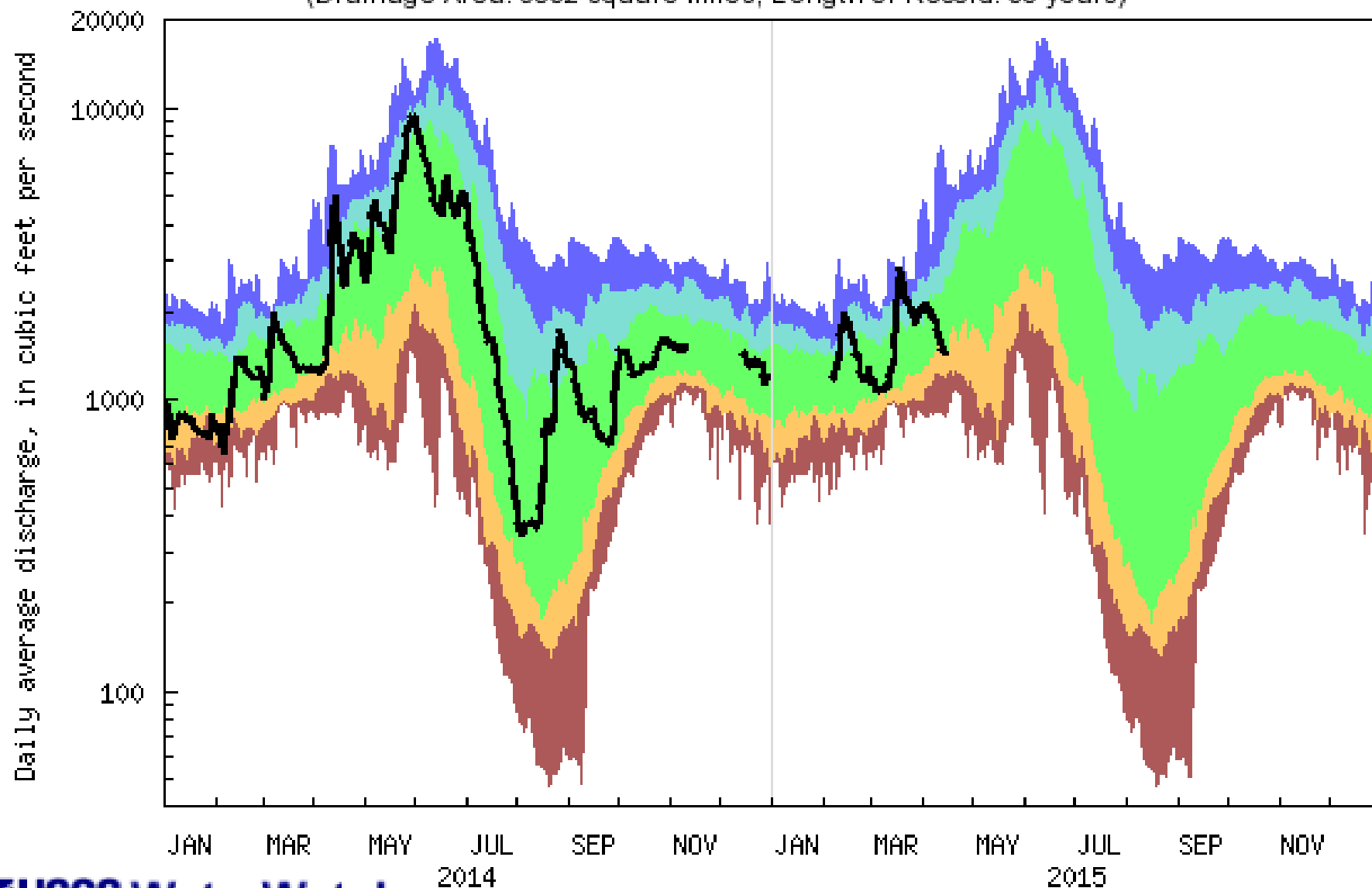
Wednesday, April 15, 2015 10:30ET



USGS

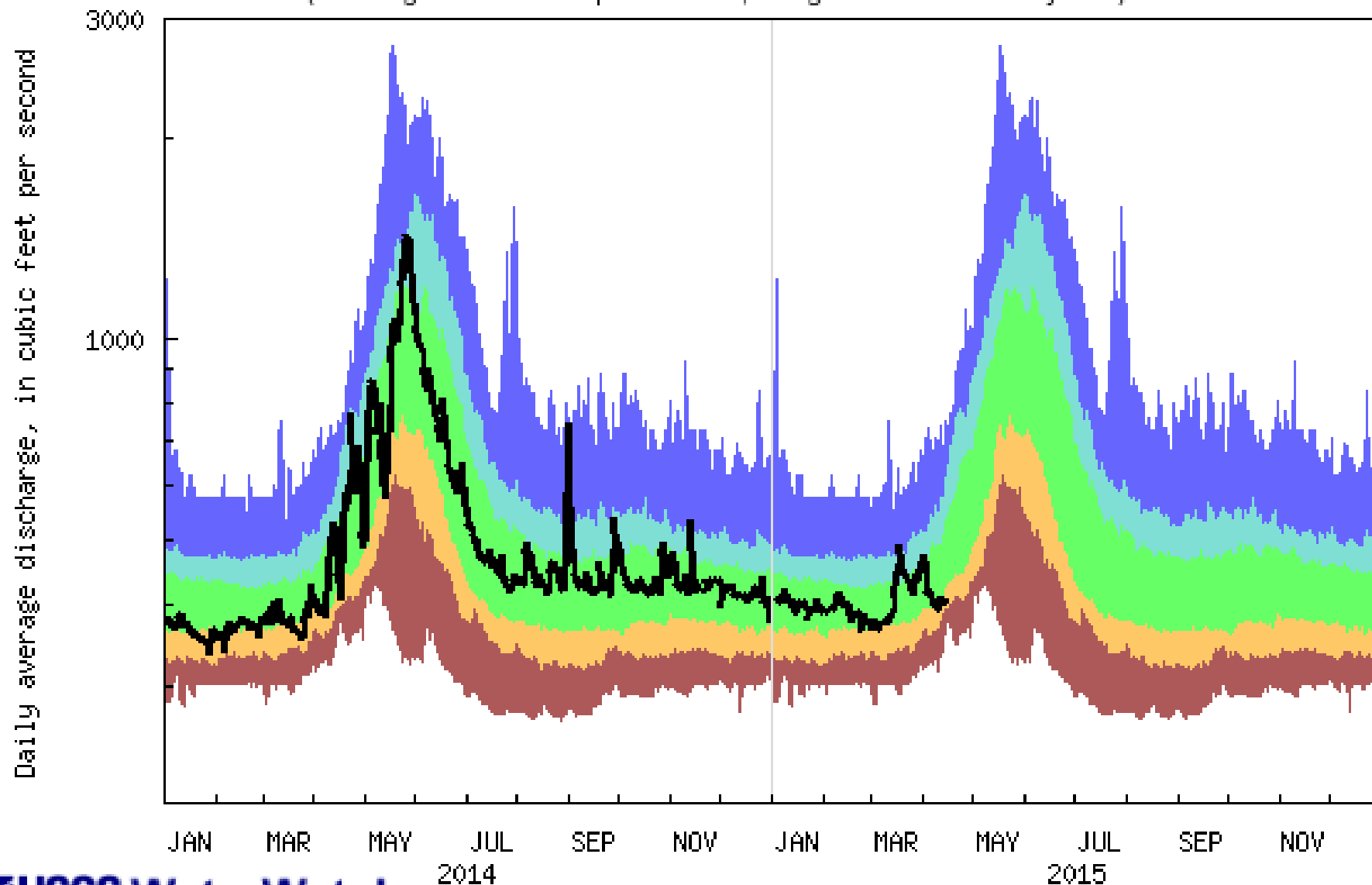
Dry Normal Wet

USGS 06036650 Jefferson River near Three Forks MT
(Drainage Area: 9532 square miles, Length of Record: 35 years)



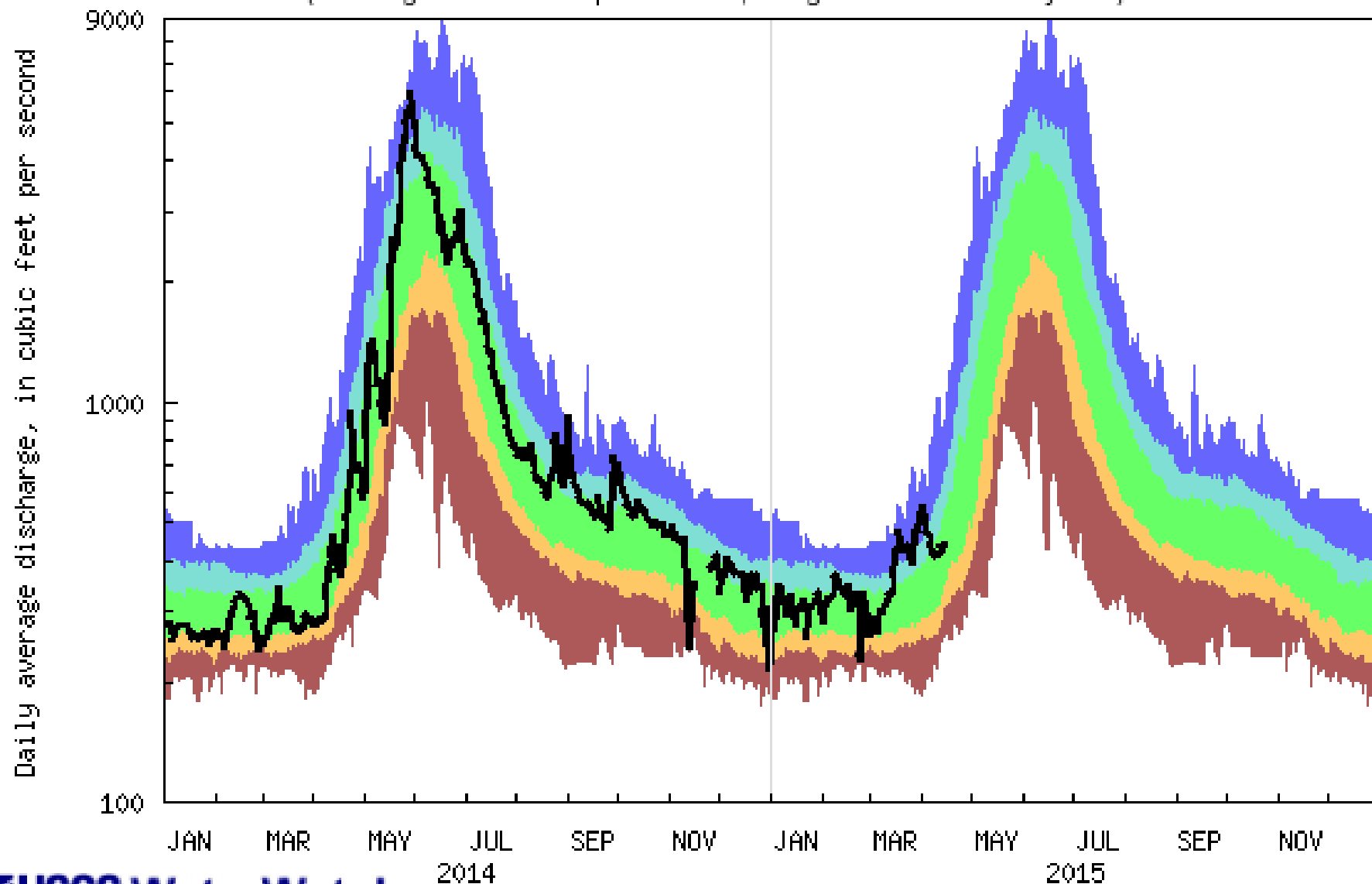
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06037500 Madison River near West Yellowstone MT
(Drainage Area: 420 square miles, Length of Record: 100 years)



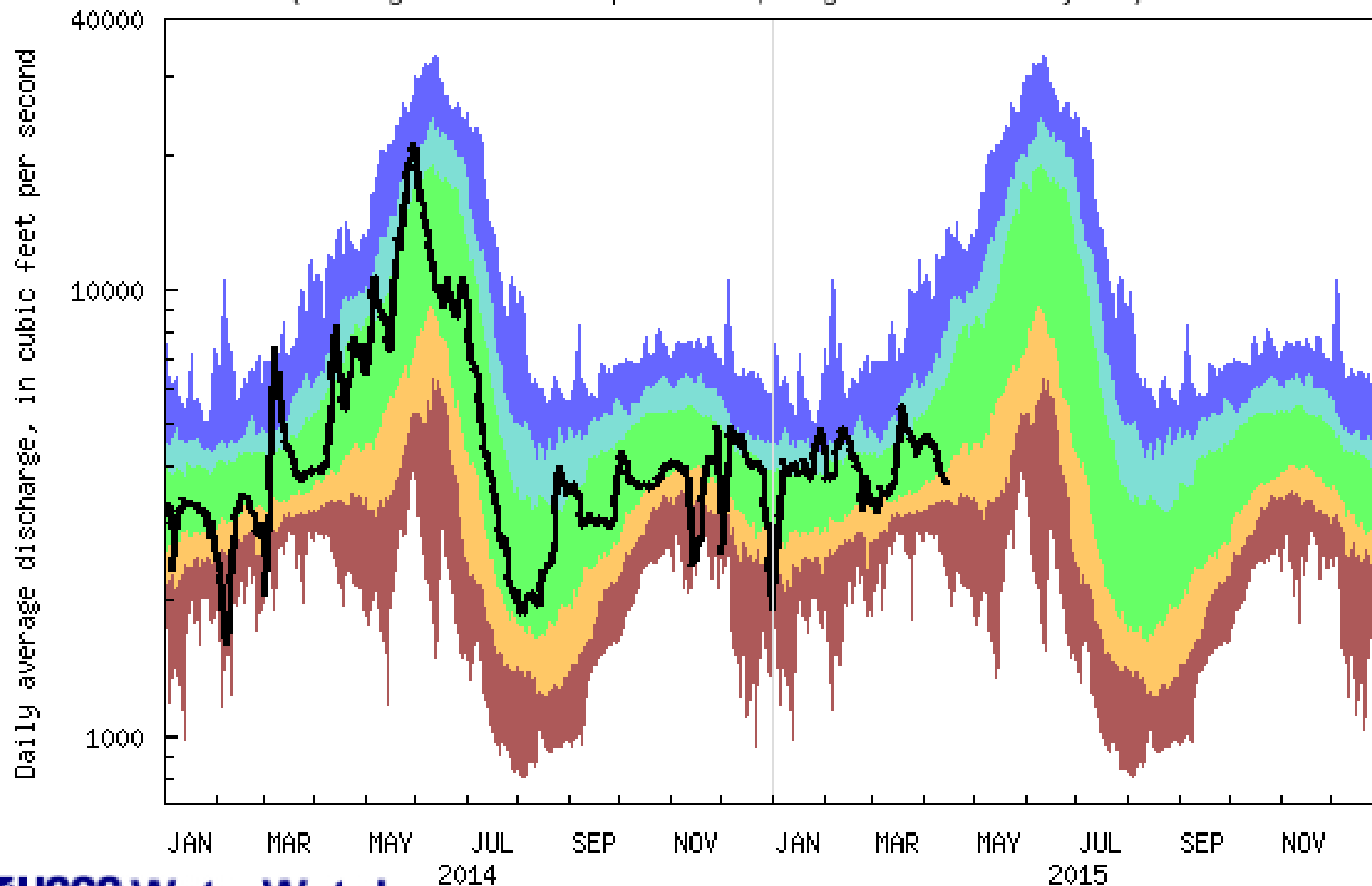
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile - highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06043500 Gallatin River near Gallatin Gateway MT
(Drainage Area: 825 square miles, Length of Record: 124 years)



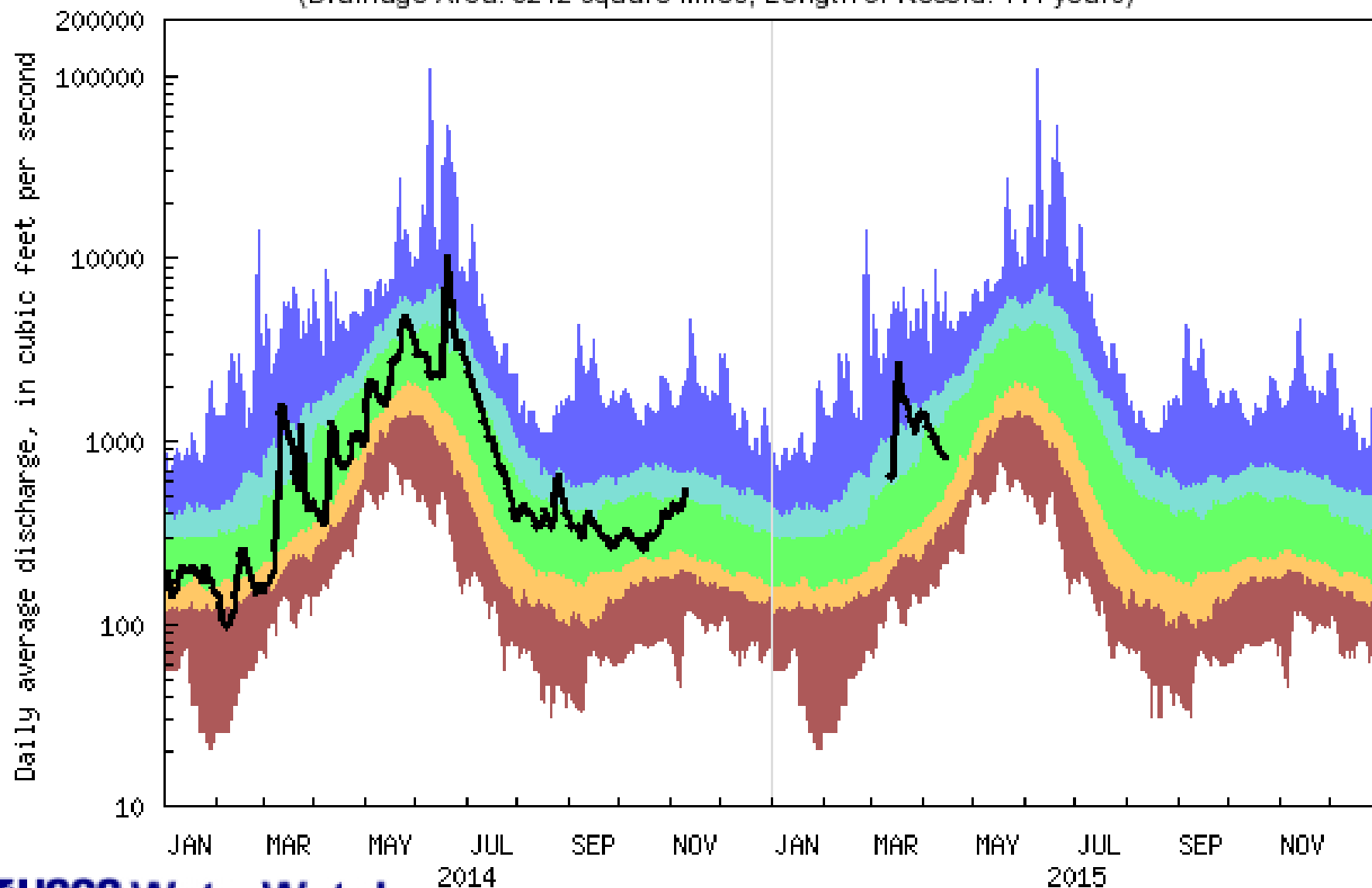
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06054500 Missouri River at Toston MT
(Drainage Area: 14669 square miles, Length of Record: 123 years)



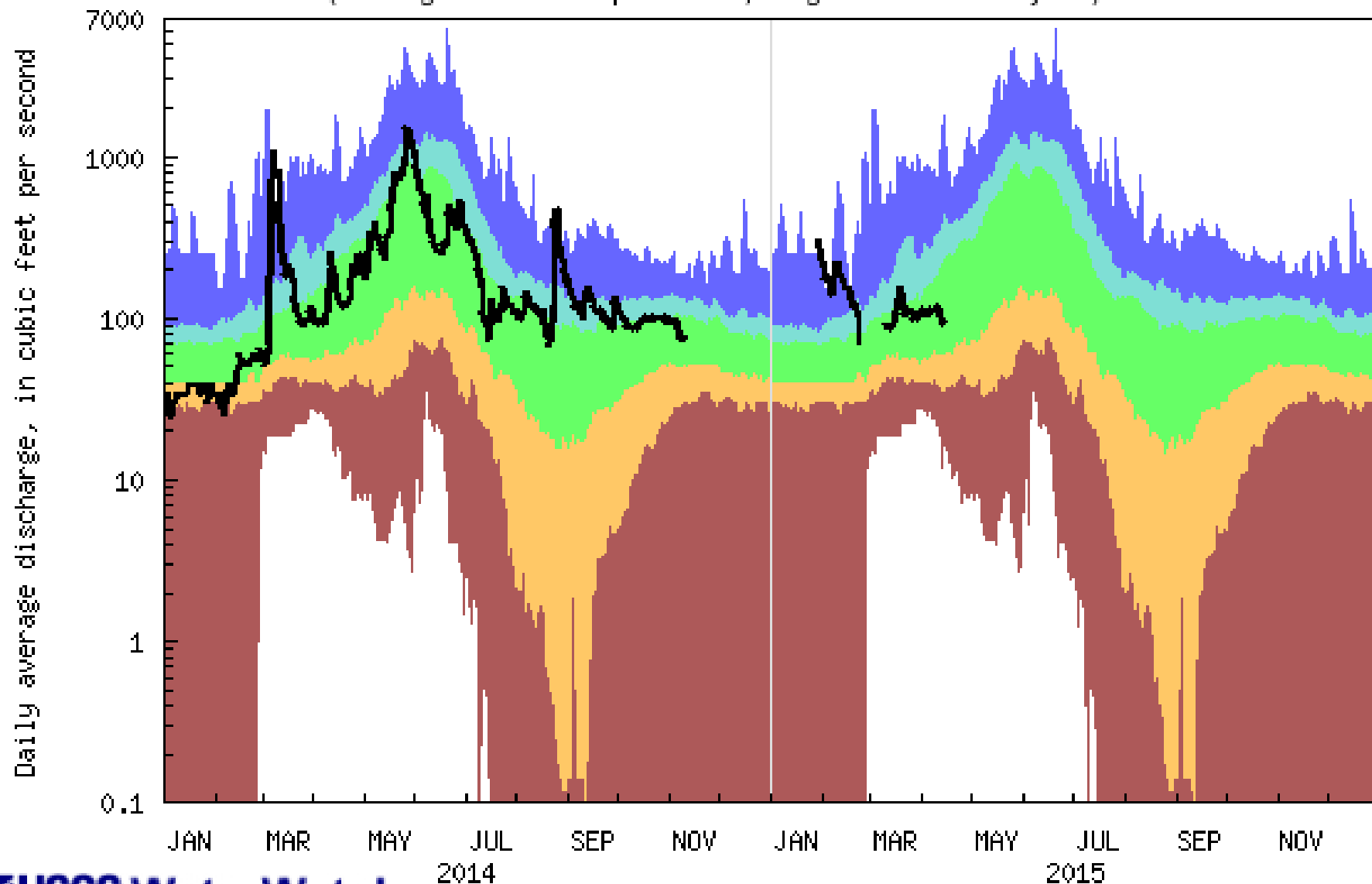
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06099500 Marias River near Shelby MT
(Drainage Area: 3242 square miles, Length of Record: 111 years)



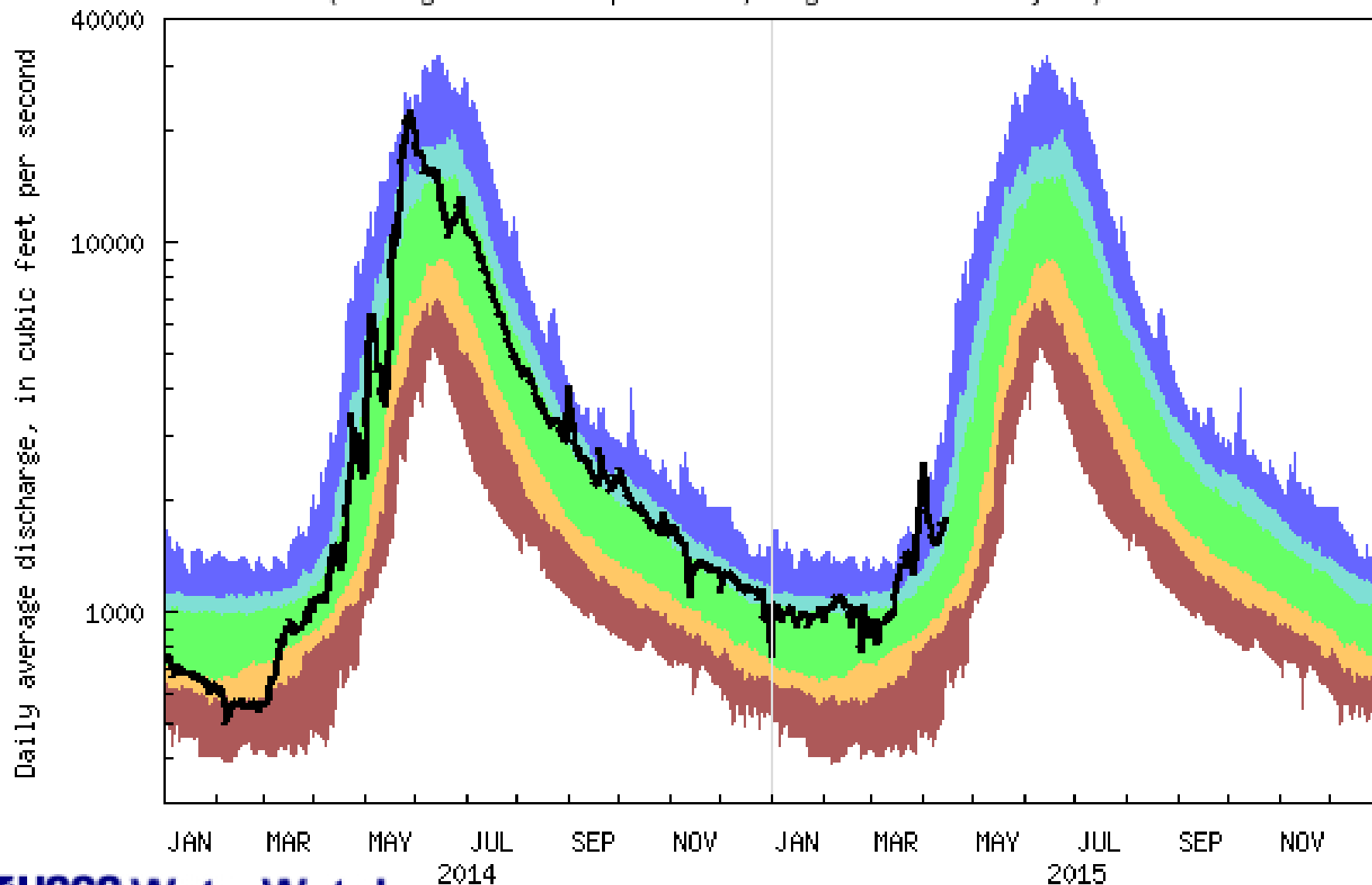
Explanation - Percentile classes					Flow
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06120500 Musselshell River at Harlowton MT
(Drainage Area: 1125 square miles, Length of Record: 106 years)



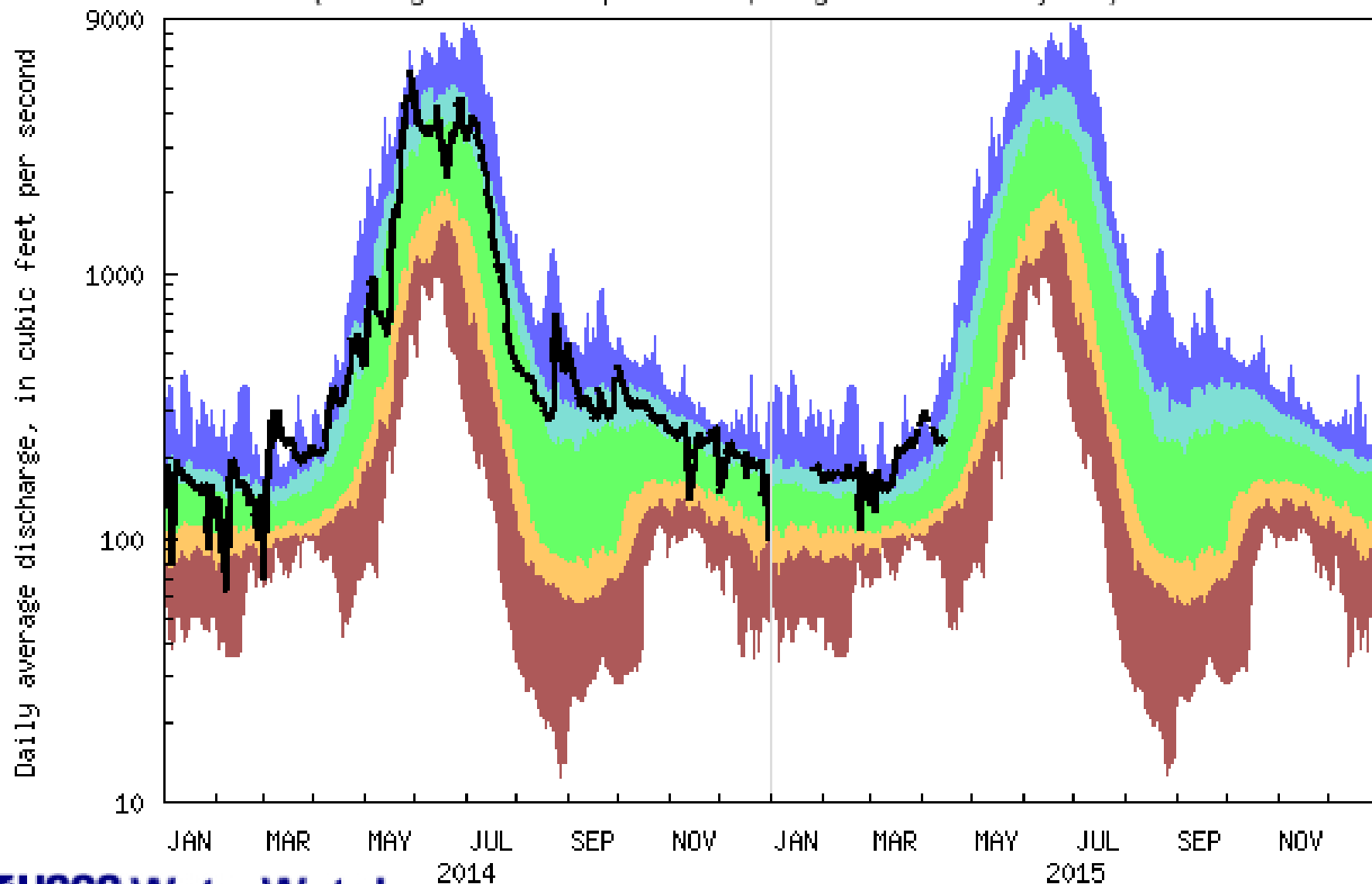
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06191500 Yellowstone River at Corwin Springs MT
(Drainage Area: 2619 square miles, Length of Record: 124 years)



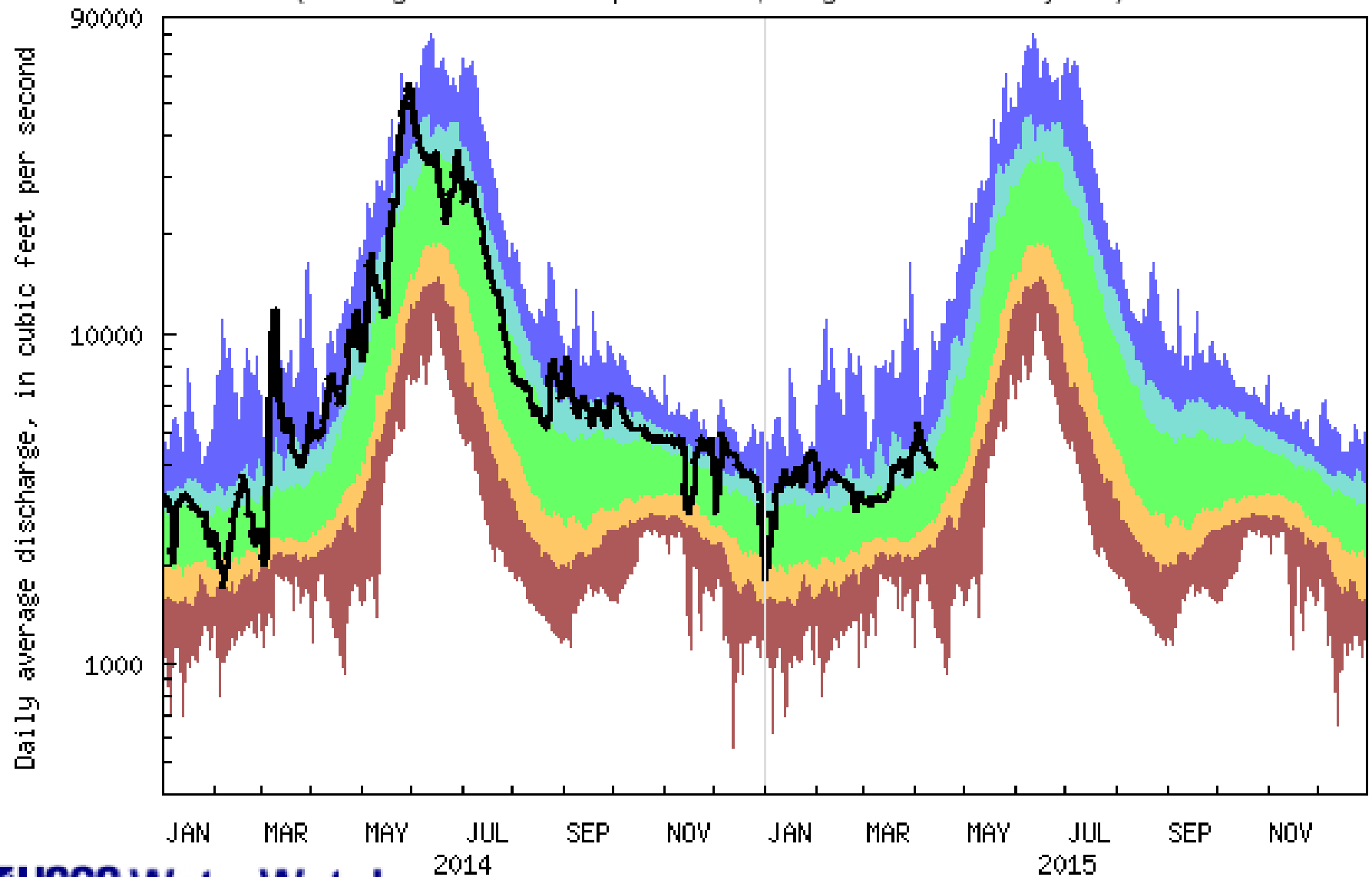
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06200000 Boulder River at Big Timber MT
(Drainage Area: 523 square miles, Length of Record: 66 years)



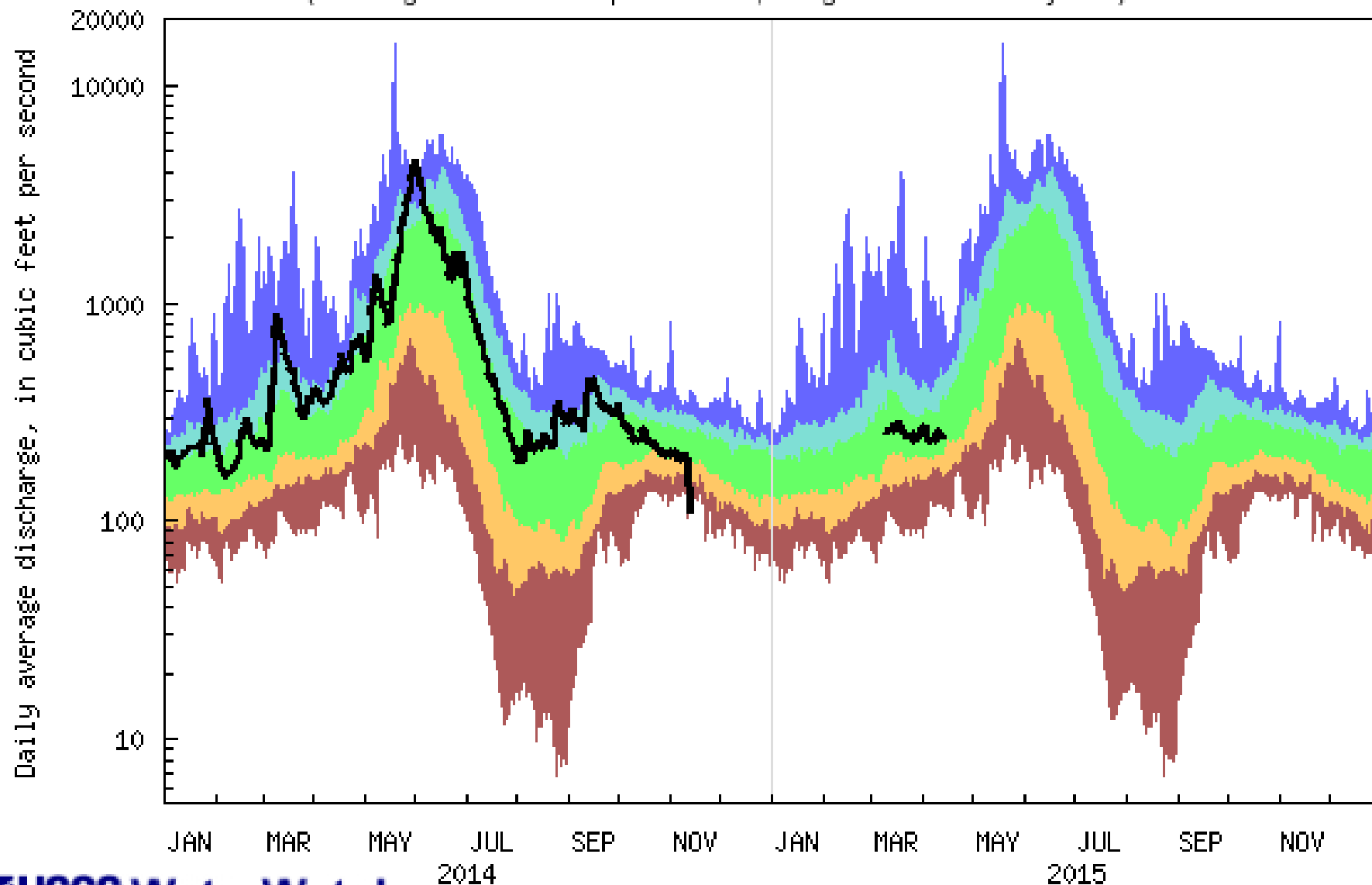
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06214500 Yellowstone River at Billings MT
(Drainage Area: 11805 square miles, Length of Record: 85 years)



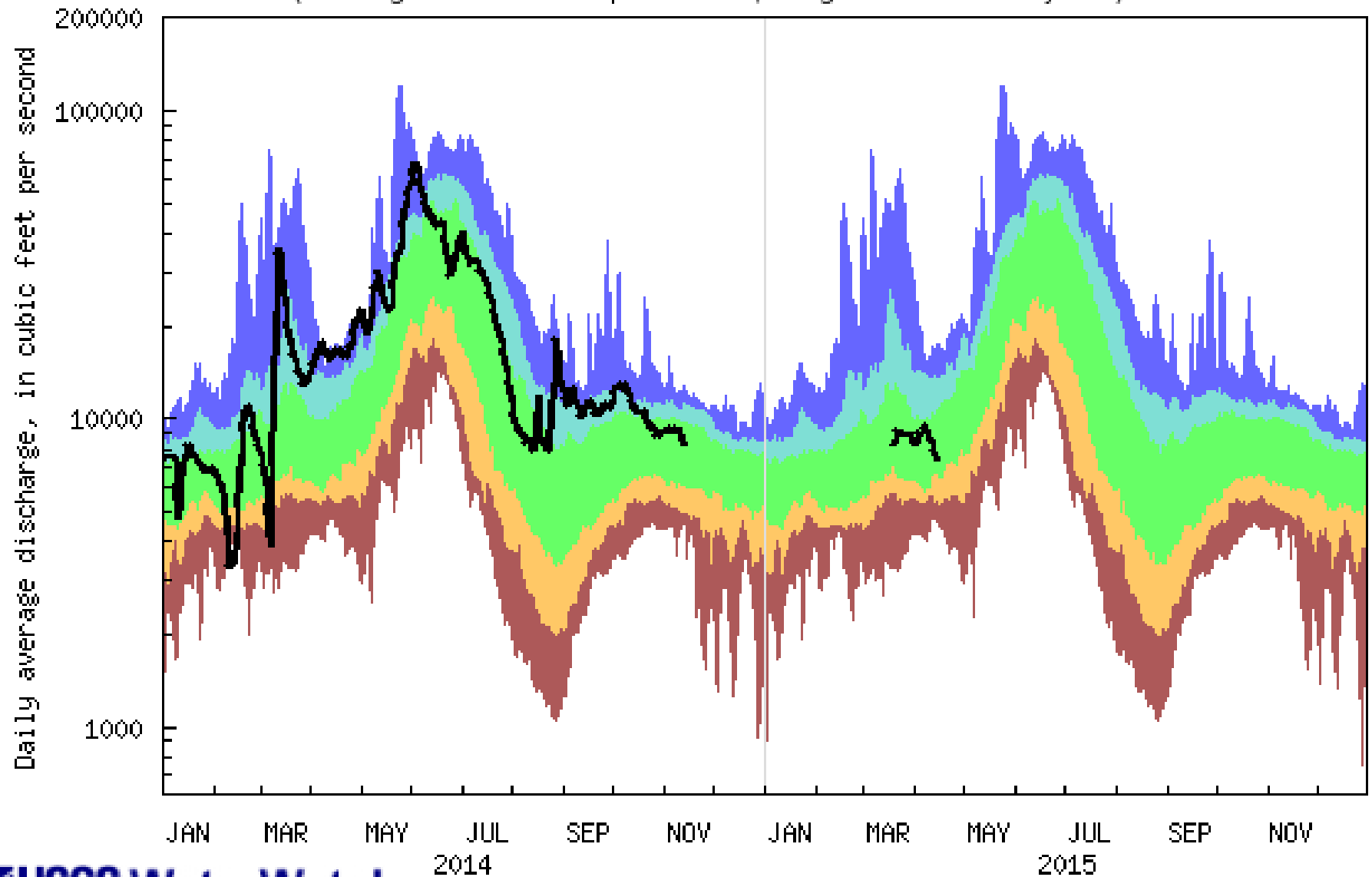
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06306300 Tongue River at State Line nr Decker MT
(Drainage Area: 1453 square miles, Length of Record: 53 years)



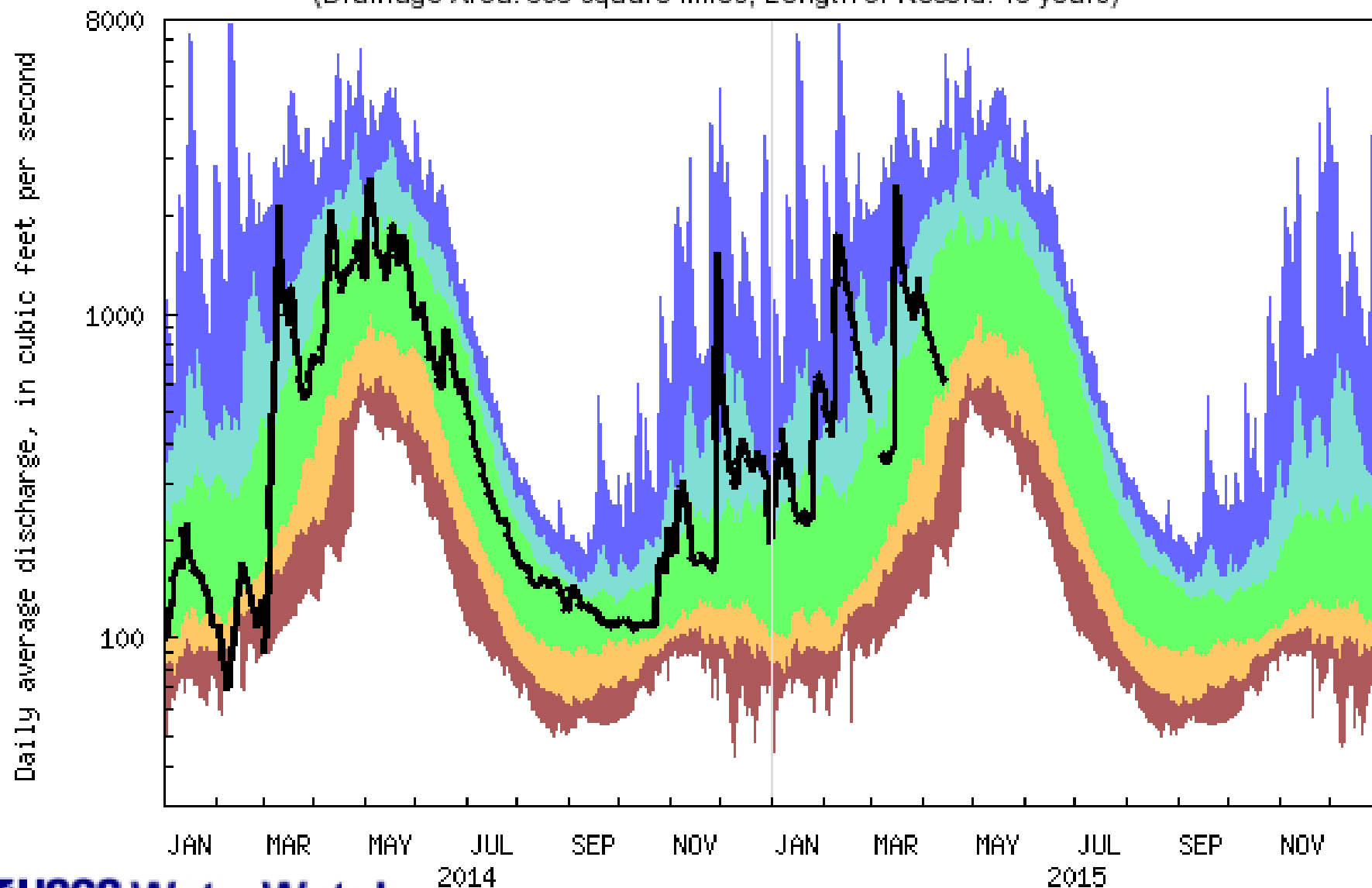
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 06329500 Yellowstone River near Sidney MT
(Drainage Area: 69083 square miles, Length of Record: 47 years)



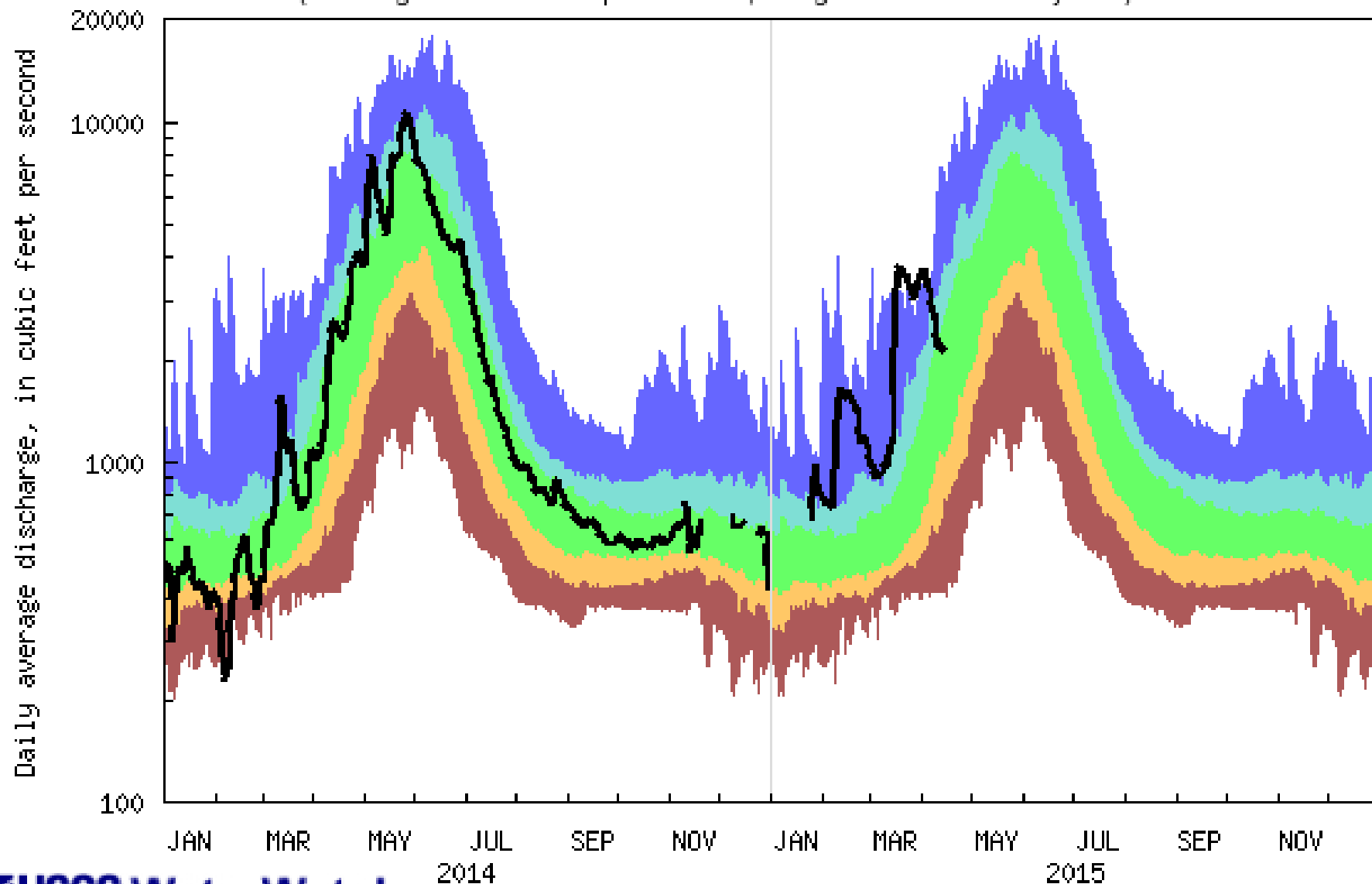
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 12302055 Fisher River near Libby MT
(Drainage Area: 838 square miles, Length of Record: 46 years)



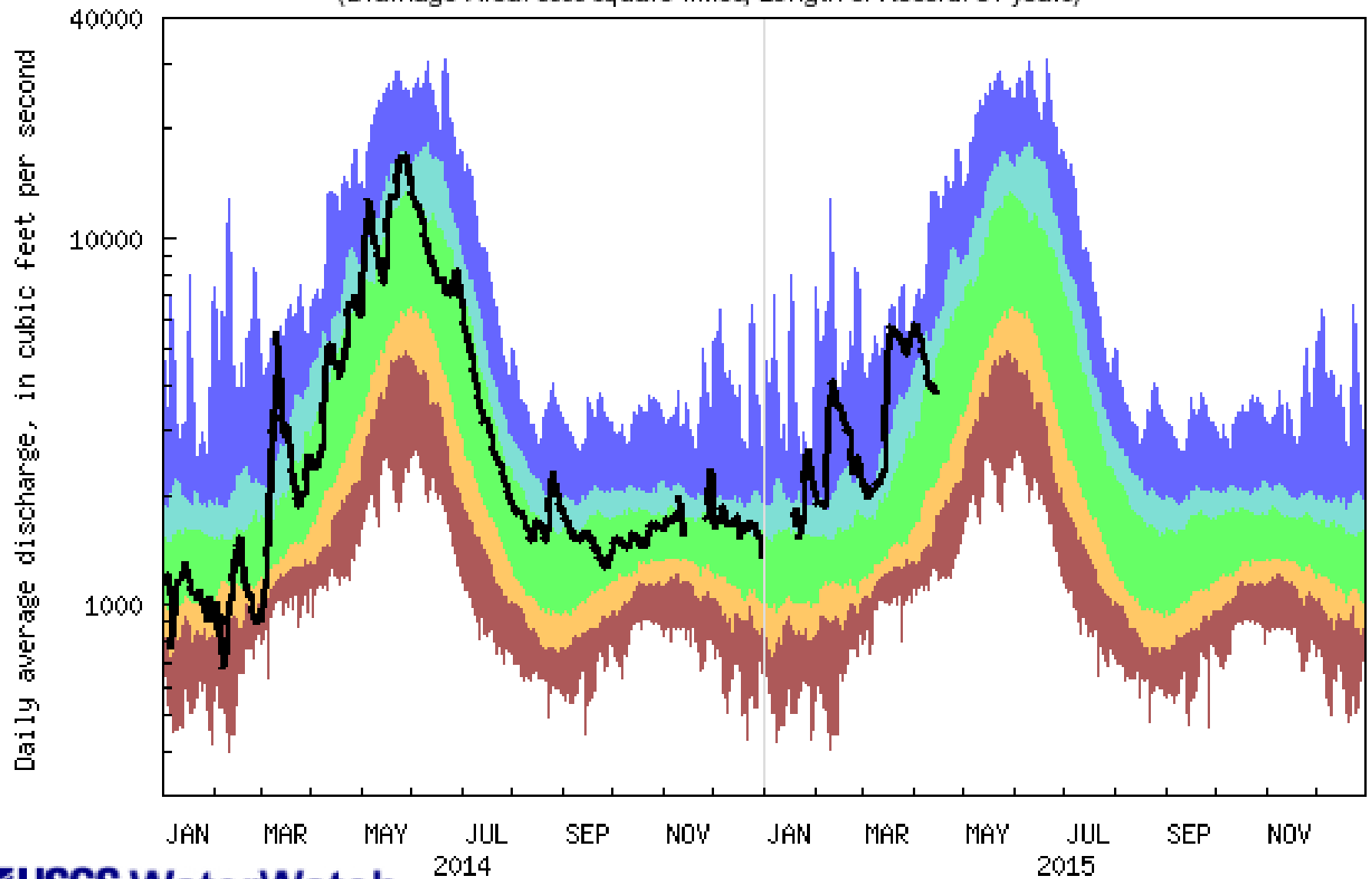
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 12340000 Blackfoot River near Bonner MT
(Drainage Area: 2290 square miles, Length of Record: 115 years)



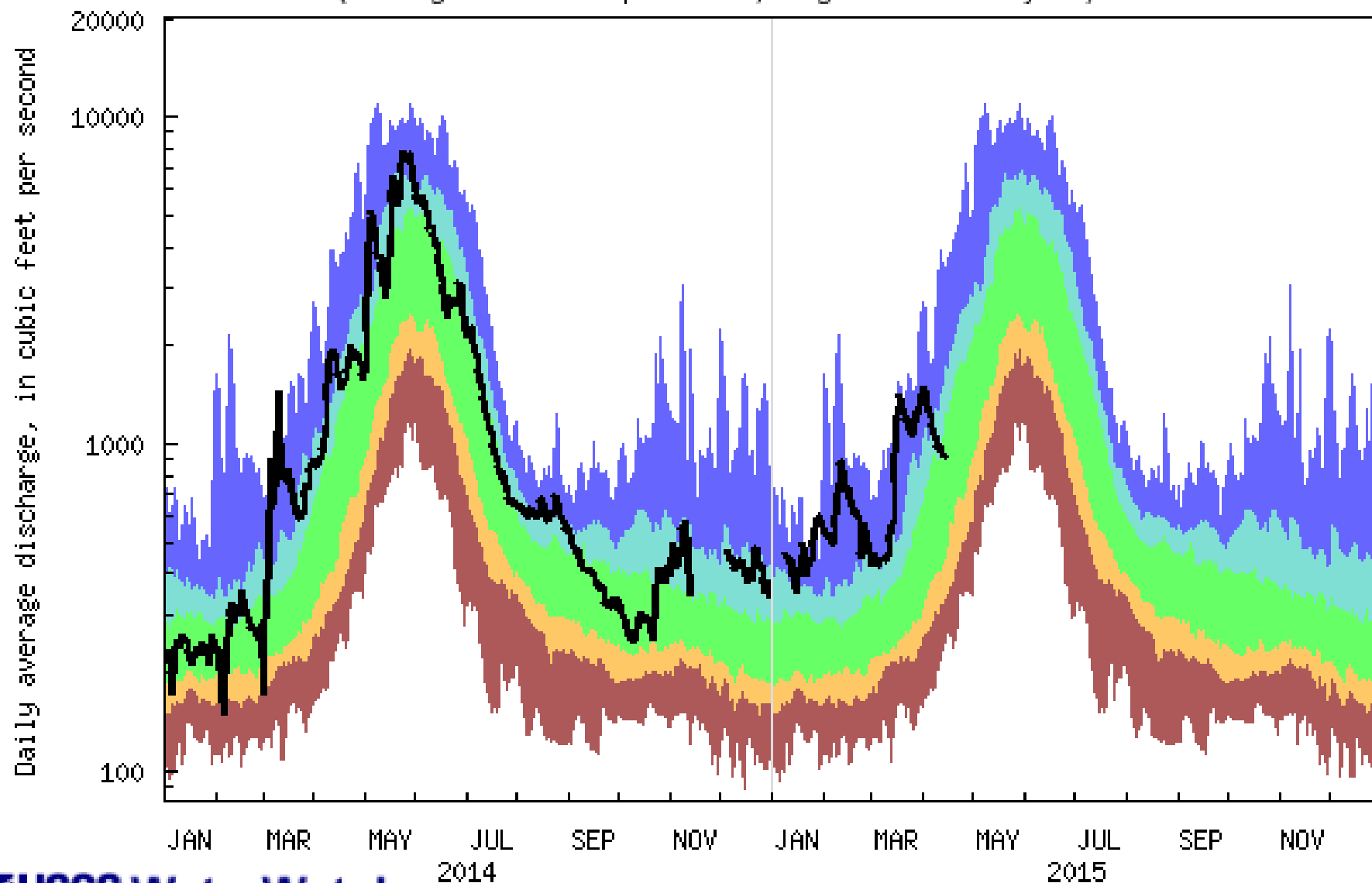
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 12340500 Clark Fork above Missoula MT
(Drainage Area: 5999 square miles, Length of Record: 84 years)



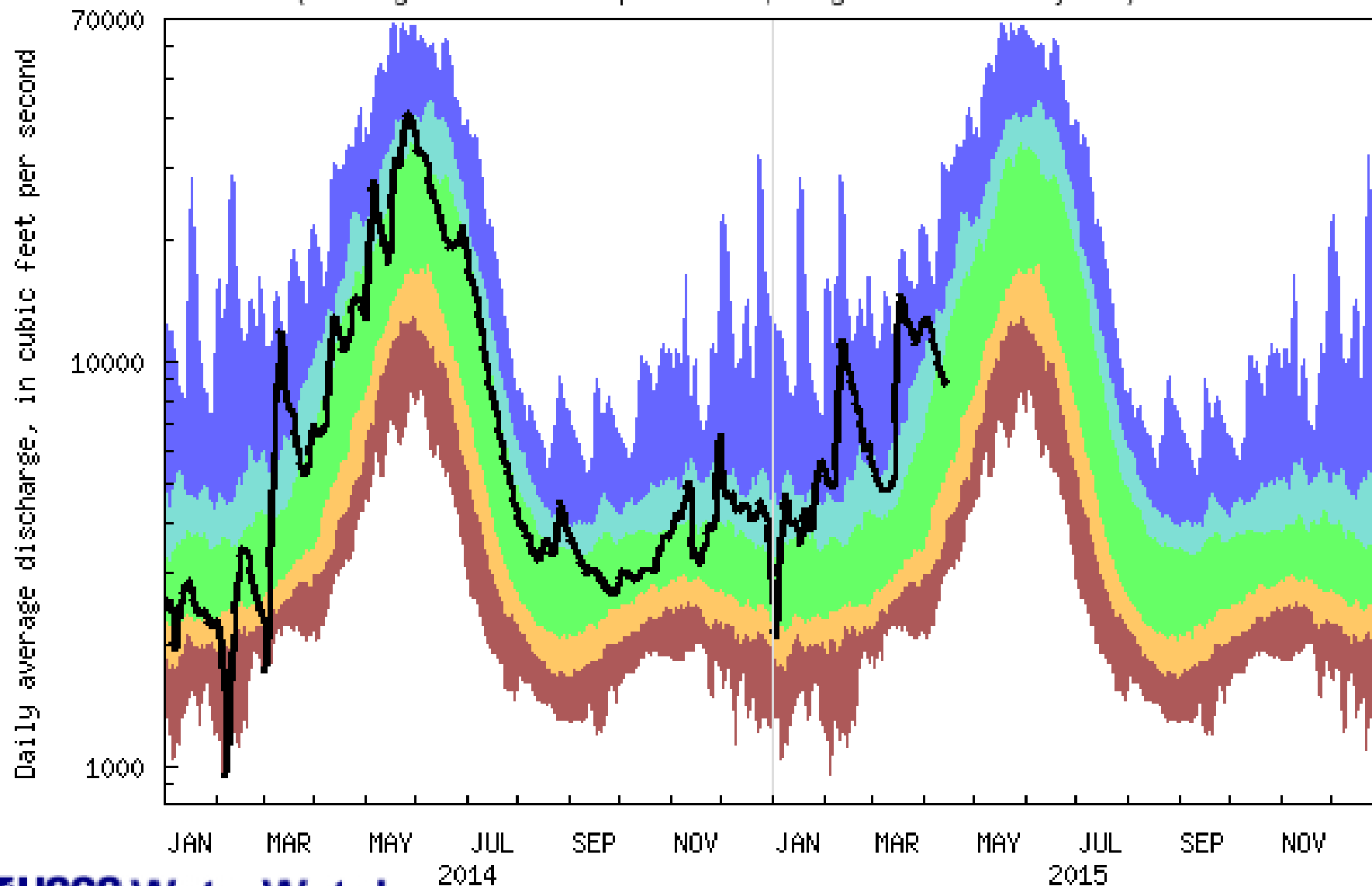
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 1234000 Bitterroot River near Darby MT
(Drainage Area: 1049 square miles, Length of Record: 76 years)



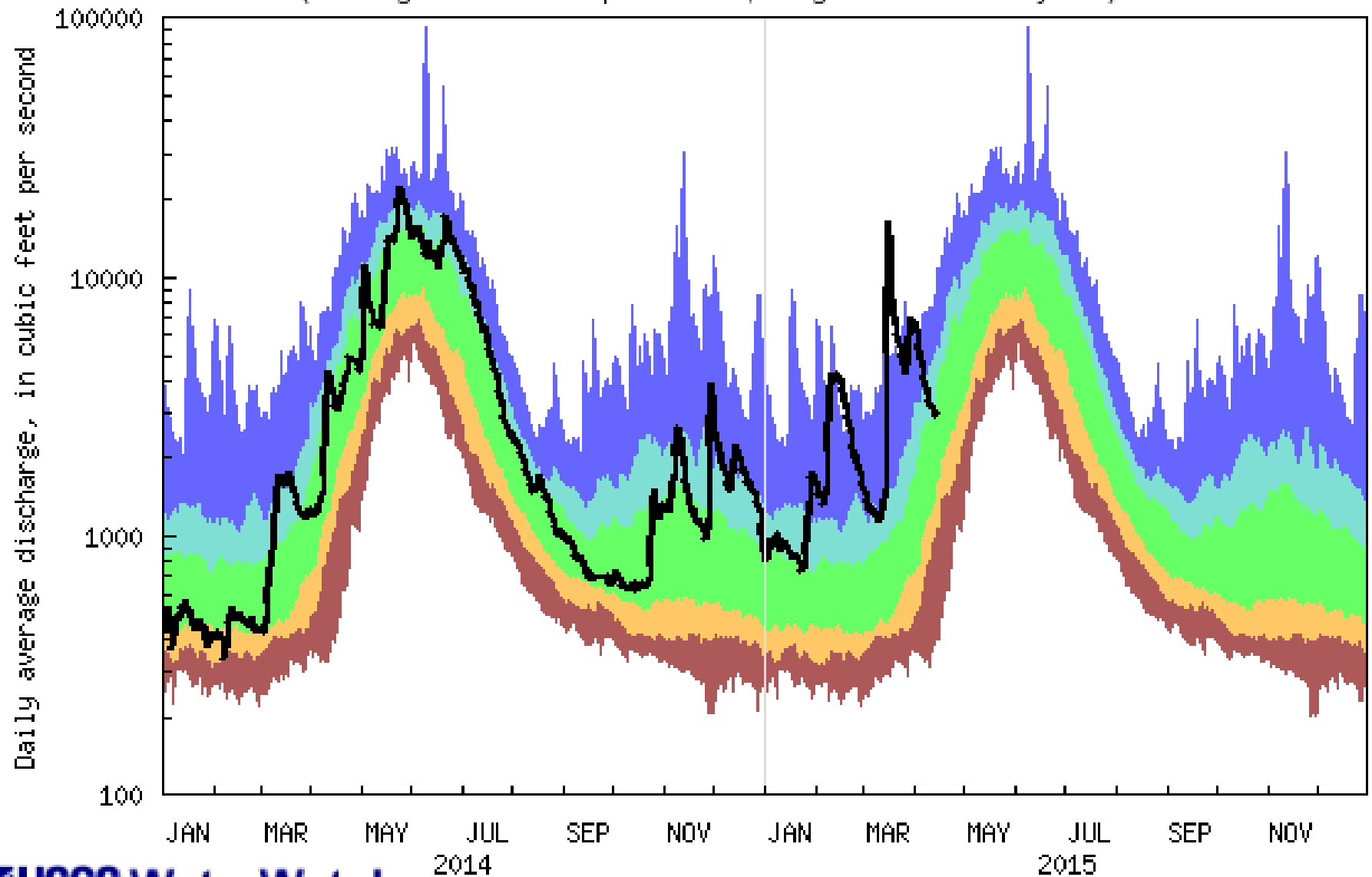
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 12354500 Clark Fork at St. Regis MT
(Drainage Area: 10709 square miles, Length of Record: 84 years)



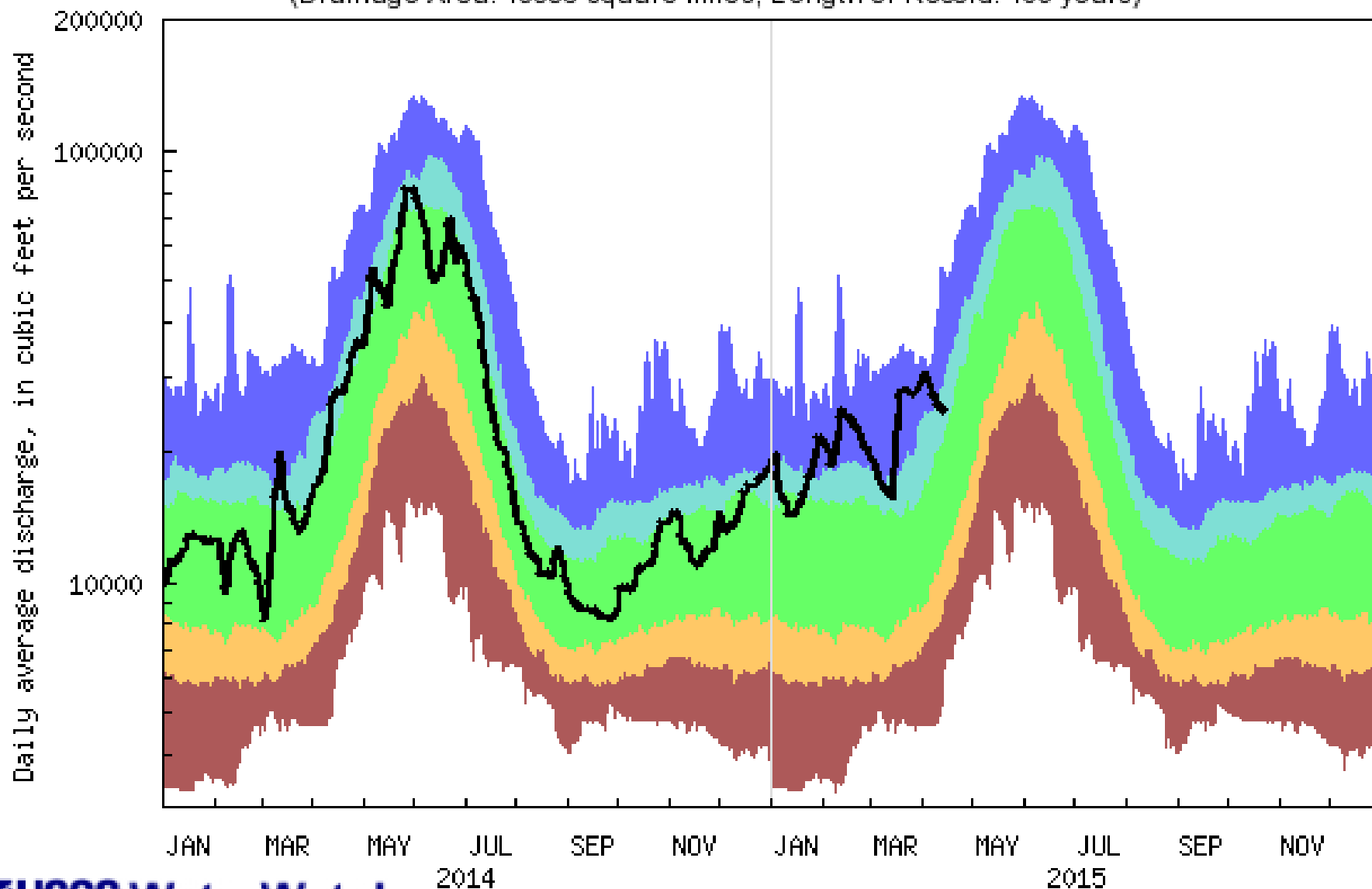
Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 12358500 M F Flathead River near West Glacier MT
(Drainage Area: 1128 square miles, Length of Record: 74 years)



Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	

USGS 12389000 Clark Fork near Plains MT
(Drainage Area: 19958 square miles, Length of Record: 103 years)



Explanation - Percentile classes					
lowest-10th percentile	10-24	25-75	76-90	90th percentile-highest	Flow
Much below normal	Below normal	Normal	Above normal	Much above normal	



USGS Home Page: <http://usgs.gov>

NWIS-Web: <http://water.usgs.gov/mt/nwis>
Access to streamflow, water quality, and ground water
information.

Wyoming-Montana Home Page: <http://wy-mt.water.usgs.gov>
Wyoming-Montana Current Streamflow Conditions